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Camera checklists – Read before you buy!
Mirrorless Cameras, Digital RF Cameras & DSLRs

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SIGMA'S NEW BF CAMERA
Bonkers Or Brilliant… Or Both?

ON TEST
Nikkor Z 35mm f/1.2 S
Big Lens, Big Price, Big Performance

Microdia's Computer Accessories For Photographers

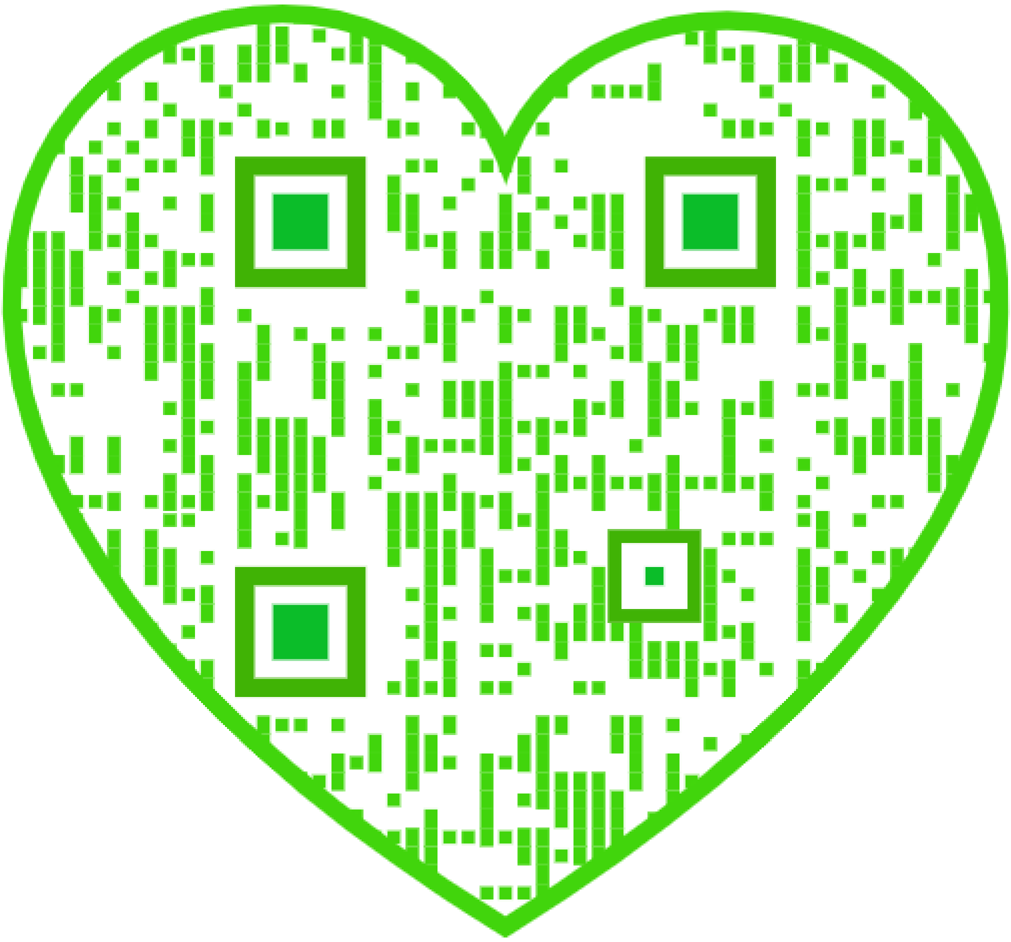
Sigma's Many Adventures In Camera Design

Let's Make A Camera – The **Nikon Z6III** Story

NIKON Z5II
Is This The Best Value Full Frame Z Mount Body?

Feast Your Eyes
World Food Photography Awards 2025 Finalists

FUTURE ISSUE 431 A$11.95



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NIKKOR
Z
Z 24-70mm 1:4 S ø72

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Nikon

AUSTRALIAN CAMERA
INSPIRE YOUR PHOTOGRAPHY

ISSUE 431

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ONE SIZE FITS ALL?

The two major new camera announcements from the last month or so could not be more different in their concepts and design philosophies. Sigma's BF is a bold move and a radical departure from anything we've seen so far in full frame mirrorless cameras. Fujifilm's GFX100RF is the camera it just had to build given the long heritage of its many rollfilm ancestors, but again it's very much a go-it-alone approach. While Sigma has gone for Spartan minimalism, Fujifilm has created a camera which has the potential to be many things to many people. The BF is on test in this issue along with some analysis of Sigma's thinking behind it, while as I write this, the GFX100RF has just arrived on my desk, ready for a test report which will appear next time, but already there are observations to be made.

At one time rollfilm rangefinder cameras with a fixed lens were commonplace, particularly in the 6x6cm format, but gradually 35mm took over and then increasingly in the reflex configuration. However, in the late 1960s, Fujifilm still saw a market for a more portable medium format; specifically at the beginning the portrait photographers that roamed Japan's major tourist spots in the days long before selfies. For this reason it went with the wider 6x9cm format and then 6x7cm for its first Fujica G series cameras which also had interchangeable lenses. The first fixed lens models appeared in 1978, again in 6x9cm and 6x7cm, and there was subsequently a long line of G cameras ending in 1998 with the GA645Zi which was essentially a point-and-shoot 6x4.5cm format 'compact' with an autofocus zoom lens, a built-in flash and a motorised film advance (remember that rollfilm doesn't need to be rewound). While essentially fully automatic, all the GA series models had manual controls for exposure and focus, and incidentally were always labelled "Professional". As it happens, none of them sold in big numbers at the time, but are now highly sought-after because of the combination of size (comparatively speaking) and the enhanced image quality even with 6x4.5cm… seemingly much better appreciated today which is undoubtedly why we now have the GFX100RF. The concept makes even more sense with digital capture with the 102 megapixels "33x44" format sensor allowing considerable scope for cropping. Leica has already gone down this route with its 60 megapixels Q models in order to add more flexibility, but with a higher resolution on tap to start with, the Fujifilm camera's cropped focal length settings will potentially deliver better image quality. The options are 35mm, 50mm and 63mm with resolutions of 62, 31 and 20 megapixels respectively, but of course you can crop however you like post-camera with the 102 MP files shot at the lens's actual focal length of 28mm. Additionally, there's a choice of nine image aspects for JPEG, including a panoramic 65:24 (i.e. 2.7:1) as per the Hasselblad XPan (which, of course, was actually a Fujifilm camera called the TX-1, but only sold in Japan badged this way). All this makes the GFX100RF extremely flexible which is further enhanced by its excellent portability – it weighs in at under 750 grams – and weather-proofed construction. It's going to work in a whole lot of applications beyond the obvious ones such as landscapes, street photography and portraiture. The price tag perhaps looks a bit steep at first until you consider that you're buying a medium format lens as well… the alternative of a preloved GFX50R body with, say, a GF 30mm f/3.5 prime wide-angle isn't going to be that much cheaper and is certainly bulkier overall (not to mention the lower res of 50 MP). As a 'one-and-only' camera, the GFX100RF ticks a lot of boxes, and is arguably a lot more desirable than the X100VI despite the big price difference.

An idea that Fujifilm has tried many times in the past with varying success looks like being a real winner with its digital era re-imagining.

6×45
FUJIFILM
SUPER-EBC FUJINON
ZOOM LENS
ZOOM

▲Fujifilm's last rollfilm fixed lens camera; the GA645Zi (1998) was essentially a 6x4.5cm format point-and-shoot.

Paul Burrows

Paul Burrows, Editor.

Camera magazine is a member of the Technical Image Press Association. Visit **www.tipa.com**

CAMERA
SIGMA'S NEW BF CAMERA
NIKON Z5II

OUR FRONT COVER: Starring on this issue's front cover is Sigma's eye-catching BF full frame mirrorless camera. It's been making waves ever since it was announced and we've got the full story in this issue, including our comprehensive test report. The inset image is by UK photographer Maja Smend and is one of the finalists in this year's World Food Photography Awards. See page 62 for more.

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Image by Jeanfranco Tenorio © 2025

REGULARS

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The headliners in this issue are obviously Sigma's BF and the Fujifilm GFX100RF, both game-changers but for very different reasons. However, Sigma has given us more than just the BF as there are also two significant new lenses – the monster 300-600mm f/4.0 supertelephoto zoom and a 16-300mm superzoom for the 'APS-C' sensor size and so is effectively 24-450mm! Sony has also unveiled a supertelephoto which spans 400-800mm and, at the other end of the focal range, a 16mm f/1.8 fast ultra-wide. From Nikon comes the much-anticipated Mark II upgrade of the entry-level Z5 mirrorless camera plus the first power zoom for the full frame system – the 28-135mm f/4.0 PZ. And, talking of supertelephoto lenses, Nikon has also revived it insane Coolpix P1000 – now called the P1100 – with a lens that's equivalent to 24-3000mm. Also in the news are Canon's PowerShot V1 and EOS R50V – both primarily aimed at video content creators – and Panasonic's Lumix S1R II which it says is its most accomplished hybrid mirrorless camera ever… that's a big claim indeed.

12 LIGHT WORK

These pictorial features are designed to help you better appreciate how successful photographers deal with different subjects and situations to create a memorable photograph. In this issue,

78 SIGMA SHOWCASE 2025

Our Showcase sponsor, Sigma lenses, is providing the competition's grand prize of a lens – your choice of model and mount – valued at up to $1000. The 2025 Showcase is now up and running with Round 1 in this ▶

Photograph by Ben Cole, © 2025.

issue, but there's five to go so you have plenty of opportunities to enter ahead. Submit your entries online at camera@futurenet.com

80 CAMERA BUYER'S CHECKLISTS – MIRRORLESS CAMERAS, DIGITAL RF CAMERAS AND DSLRS

It's been a bumper first quarter of 2025 with many new cameras arriving so maybe now is the time to upgrade in one way or another. Our camera checklists for mirrorless cameras, DSLRs and the digital RF models allow you to directly compare key specifications and features at the main price points.

FEATURES

Photograph by Karl Bruninx, © 2025.

18 COMPETITION TIPA PHOTO CONTEST: CAMERAMORE

TIPA's annual photography competition again explores the close relationship we have with our cameras… which is maybe even a love affair.

38 BEFORE BF SIGMA'S ADVENTURES IN CAMERA DESIGN

The Sigma brand is most commonly associated with lenses, but the company has been building its own cameras from the mid-1970s. Since then, there have been many 35mm SLRs, 35mm compacts, DSLRs and, most recently, mirrorless cameras. The new BF may be a bold 'clean slate' design, but it still has quite a heritage behind it.

62 COMPETITION – WORLD FOOD PHOTOGRAPHY AWARDS 2025 FINALISTS

There's a new name and a new sponsor, but the world's biggest competition for food and beverage photography is still serving up a tasty of smorgasbord of creative images.

72 CLASSICS – APERTURE-PRIORITY AUTO 35MM SLRS

As automation began to take hold in 35mm SLRs, it was made more affordable by a brief, but prolific generation of models that only had aperture-priority auto exposure control and nothing else (not even a manual mode). For a great many amateurs these cameras were the stepping stone to greater things in photography.

77 CAMERA ICONS ROLLEIFLEX TLRS

The standard equipment for both professionals and enthusiasts for many decades, Rollei's twin lens reflex models – and there were a huge number of them – also helped many beginners get started in photography. In one form or another, Rolleiflex TLRs stayed in production for 70 years..

ON TRIAL

30 ON TRIAL SIGMA BF

It's attracted plenty of debate and discussion, but the fact that the BF is currently selling like hotcakes suggests that Sigma's "radically simple" design philosophy is striking a chord with many. There's no question it's a very different approach, but does it work? We've been finding out.

44 ON TRIAL NIKON Z5II

We loved the first Z5, but Nikon has made its successor even more desirable with a faster sensor and a faster processor plus significant upgrades to its AF system and video capabilities. It's also a delight to use so is the entry-level full frame Z mount body now the most desirable in the line-up?

54 ON TRIAL NIKKOR Z 35mm f/1.2 S

It's big and it's expensive, but Nikon's latest f/1.2-speed Z mount prime is capable of stunning image quality across its aperture range and proves to be a surprisingly versatile all-rounder in the field.

70 MINI TEST MICRODIA ACCESSORIES

Now available from photo and imaging distributor Maxxum Pty Ltd (which also brings you Samyang, Benro, Tenba and more), the Microdia range of high-end computer accessories is extensive. We've sampled just a small selection of products with applications for photographers.

SONY OFFERS COMPACT AND AFFORDABLE SUPERTELE ZOOM

SUPERTELEPHOTO ZOOMS LOOK set to become a must-have in a full frame mirrorless system perhaps to counter what's on offer with the cropped sensors. Sony has taken a different approach to Sigma with its new FE 400-800mm (the first lens in the mount to reach 800mm), opting for a slower maximum aperture in order to reduce the lens's size, weight and cost. Consequently, the FE 400-800mm f/6.3-8.0 G OSS weighs in at 2.475 kilograms and is 34.6 centimetres in length. Zooming is performed internally so the barrel length and balance always remains the same. Focusing is performed internally too. Hand-held shooting is assisted by optical image stabilisation which gives up to four stops of correction for camera shake by itself and up to stops when combined with IBIS. Furthermore, the 400-800mm is compatible with Sony's 1.4x and 2.0x teleconverters, the latter giving a focal range of 800-1600mm.

The physical construction employs magnesium alloy barrel tubes with weather sealing and an anti-smudge fluorine coating on the front element. On-barrel controls include three focus hold buttons, a focus range limiter switch and a selector switch for the stabilisation. On the inside, the optical construction employs 27 elements in 19 groups which includes six with extra-low dispersion (ED) characteristics to minimise chromatic aberrations. Focusing adjustments are performed by a pair of linear motors, enabling rapid enough adjustments to support the A9 III's shooting speed of 120 fps. Sony's full-time 'DMF' manual focusing override is available for rapid fine-tuning. The minimum focusing distance is 1.7 metres at 400mm, giving a maximum magnification ratio of 1:4.3. Sony says that the zoom's optical design minimises focus breathing as well as focus and axial shifting when zooming. The lens also supports the breathing compensation function provided in the more recent Alpha mirrorless camera bodies.

The FE 400-800mm has a screwthread filter fitting of 105 millimetres, an 11-blade circular diaphragm for smoother out-of-focus effects and a new lens hood which locks in place and also allows for filter adjustments.

The Sony FE 400-800mm f/6.3-8.0 G OSS is priced at $4399 and is available in Australia now. For more information visit **www.sony.com.au**

COMMENT

LESS IS... ER... LESS

AFTER WE APPLAUDED the current fashion for retro camera designs – as exemplified by the Nikon Zf and the OM System OM-3 – what to make of Sigma's pared back BF? Sigma says it has deliberately stepped away from any conventional camera design elements in the pursuit of "radical simplicity" and the idea of "an everyday camera" that also works as an alternative to a smartphone".

Of course, with a price tag just shy of $4000 before you add a lens, the BF is anything but "everyday" and, as a full frame L mount mirrorless camera, it's up against some pretty serious competition. But there, I suspect, is where many of us reviewers are going wrong and – but I'm conceding only possibly – missing the point of the BF. No matter which way you look at it, Sigma is challenging everything we think that a contemporary mirrorless camera should be… and, indeed, what it should do and how it should do it. The BF is unquestionably radical and its designers have clearly relentlessly pursued their goal seemingly completely shut off from any taint of tradition or convention. We're told that 'BF' apparently stands for "beautiful foolishness" which was term originally used in reference to Japan's traditional tea ceremony, but it's apt because, while the camera is undoubtedly beautiful, it's hard not to conclude it's also foolish… very.

The one-piece aluminium bodyshell is a work of industrial art and here the simplicity works beautifully… it looks great and feels even better. But then somebody has dived into Leica's *Das Wesentliche* playbook and taken the concept of stripping down to the bare essentials way beyond what the Germans have ever dared. There's more than a hint of the Leica T in the Sigma BF with both the design concepts and their execution having much in common. But Leica didn't go quite as bonkers with the delete button which, perhaps to Sigma's way of thinking, means it didn't go far enough… so the final result was a compromise. But has Sigma gone too far? At what point does maintaining a purity of design at all costs start to come at the cost of some other things, particularity practicality and usability?

Soooo… the BF doesn't have an EVF, there's neither a hotshoe nor a built-in flash, no memory card slot, no wireless communications, no physical shutter and no IBIS. The monitor screen is fixed and there's one interface – a USB C port – along with just a handful of external controls. You'd think there's some essentials in that little lot, wouldn't you, but the camera's massive internal memory is nice (if potentially problematic), and many photographers don't use flash… especially with the high ISO performance of a 24 MP full frame sensor being so good. And I, for one, don't use any wireless functions so that's not an issue for me. The real biggie – especially in Australia where the sun shines a lot – is the fixed monitor along with the absence of an EVF. For a camera supposedly designed primarily for keen photographers and with the stated aim of eliminating "…everything that distracts from your interaction with the image", not including an eyelevel viewfinder is a very big miss indeed. Alternatively, at least make the monitor adjustable for tilt to help deal with reflections. It's likely some of this has to do with maintaining a purity of form, but function has suffered accordingly. The BF's user interface is nice, but not as simple as Sigma would have you believe, but then it really can't be with a camera that actually has a pretty decent feature set. If, like me, you're of A Certain Vintage, you'll need to unlearn some basics, but it does work well and becomes ever more efficient with practice.

Messing around with the fundamentals of camera design has had mixed success in the past – the Leica T series had a comparatively short life – which is definitely one reason why the retro designs are doing so well. The Sigma BF is as audacious as it is daring, but it's harder to pin down exactly what it is… fashion statement, style icon, prestige product, unique high-end camera or a luxurious point-and-shooter? There's the potential to be all of these things and, despite my initial misgivings, it's fun to use if occasionally frustrating (which will surely go over time). Thinking outsaid the square is always a gamble, especially when there are such well-established – and accepted – rules of engagement as is the case with camera design and operation. Sigma is to be commended for taking a totally different path, but there's no question the way ahead from here will have its challenges. **Paul Burrows, Editor.**

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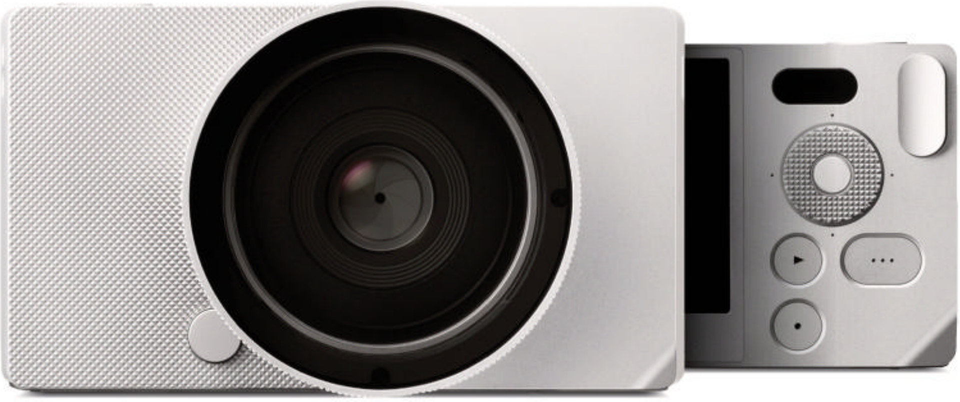

SIGMA PLAYS IT COOL WITH NEW FF MIRRORLESS CAMERA

A MARKED DEPARTURE from any of its previous designs – although arguably just as quirky – the new Sigma BF is a full frame mirrorless camera which uses the L mount and has a 24.6 megapixels BSI-CMOS sensor. However, that's were conventionality ends and Sigma describes the BF as "…an uncompromising new vision for the digital camera". At the international launch at Sigma's HQ in Tokyo, company CEO Kazuto Yamaki stated, "We need a dedicated camera for everyday life… an everyday system camera for creative minds". He described the BF as "a modern-day camera obscura" with "radical simplicity".

The simplicity begins with a one-piece bodyshell milled from a solid block of aluminium in a process which takes seven hours and makes for exceptional solidity. The number of external controls is kept to an absolute minimum – centred around a single, flush-fitting control wheel/keypad – and with just about everything performed via dual-layer interface which doesn't use conventional menus and instead superimposes two lines of settings and function icons along the top and bottom of the live view image. There's no EVF and no memory card slot as the BF is equipped with 230 GB's worth of internal memory and the only interface is a USB Type C port which obviously does everything including battery recharging and connecting an external microphone or a cable release. A physical connection is the only option too, as there's no wireless communications built-in at all. There's no hotshoe either and the BF doesn't have a built-in flash (precluded anyway by not having a physical shutter or, alternatively, a faster-reading stacked sensor). The monitor is fixed and uses an 8.1 cm TFT LCD panel with a resolution of 2.1 megadots and, obviously, extensive touch screen capabilities. Incidentally, the camera's rear-panel command dial and buttons are touch-sensitive controls with haptic feedback.

Still images are captured as JPEGs or 14-bit lossless RAW files in the DNG format at 6016x4012 pixels. There's a choice of six aspect ratios and a 1.5x crop which gives an image size of 3840x2560 pixels. Continuous shooting is at up 8.0 fps for 1000 JPEGs or 250 RAW DNG files (the built-in memory is good for 14,000 JPEGs, 4300 RAW files or 2.5 hours of 6K video). Video can be recorded at up to 6K res and 30/25 fps, 4K and 30/25 fps or FHD at up to 100/120 fps. It uses the H.264 and H.265 codecs in the MOV format, and there's an L-Log colour profile option. Electronic image stabilisation (EIS) is available for 4K and 2K video, but there's no IBIS for stills.

The sensor-based shutter has a speed range of 30-1/25,600 second with a 'B' timer for up to five minutes. AF is via a hybrid phase/contrast system with subject recognition for humans and animals (specifically dogs and cats). The choice of multi-zone or spot metering measurements drives the standard set of 'PASM' control modes, with a sensitivity range equivalent to ISO 100 to 102,400 with extensions down to ISO 6. Additionally, there's a choice of 13 colour modes including some of which we've seen on Sigma's fp L model such as 'Teal And Orange', 'Forest Green', 'Warm Gold' and 'Sunset Red'. These can be applied to both stills and video. Compared to the fp L, however, the emphasis with the BF is more on doing everything in-camera.

With the battery installed, the body weighs in at 446 grams and Sigma describes the camera as being "dust and splash resistant", but not waterproof (especially as the USB port doesn't have a cover). A textured front panel serves as a grip (and there is a thumb rest at the rear), but otherwise the camera's lines are completely clean and uncluttered.

The BF is available in black or silver and, to match the latter, Sigma has issued all nine of its compact I series L mount prime lenses with silver barrels (the black models also get revised cosmetics). The BF body is priced at $3995 body only and is available locally now in either silver or black. Sigma products are distributed by C. R. Kennedy Photo Imaging and for more information visit **https://sigmaphoto.com.au**

Your photo & video experts
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Credit | **'Satelite' by Paul Tidey** who shot this amazing photo with a Canon EOS R5 camera and the Canon RF200-800mm F6.3-9 IS USM lens.

SONY GOES FASTER WITH ULTRA-WIDE G SERIES PRIME

SONY CONTINUES ITS seemingly non-stop expansion and revision of its FE mount lens system which now boasts well over 70 models. Launched along with the FE 400-800mm supertelephoto zoom at the recent CP+ Show in Japan, the FE 16mm f/1.8 G ultra-wide prime is designed for both photography and video-making. Despite the short focal length and fast aperture, it's still a compact lens measuring 75 millimetres in length and weighing only 304 grams. It has a weather-sealed construction along with a fluorine coating on the front element to help repel moisture, grease and dust. The aperture collar can be switched between click-stopped or continuous adjustment (the latter for finer exposure control when shooting video), and there's an iris lock to prevent accidental switch between auto and manual aperture control. There's also AF/MF focus mode switch on the lens barrel and a focus hold button which can be set to alternative functions if desired.

The optical construction employs 15 elements in 12 groups which includes three aspherical types and two with extra-low dispersion (ED) characteristics. The diaphragm has 11 blades to give smoother, rounded out-of-focus effects and the minimum focus distance is 13 centimetres which gives a magnification ratio of 1:3.3 (or just over one-third life size). Focusing is performed internally and the new 16mm f/1.8 supports the breathing compensation function provided in the latest-generation Alpha mirrorless camera bodies. The AF drive uses a pair of 'XD' (eXtreme Dynamic) linear motors tracking to enable very fast adjustments and support the A9 III's 120 fps continuous shooting speed. The screwthread filter fitting is 67 millimetres.

The Sony FE 16mm f/1.8 G is priced at $1899 and is available now. For more information visit **www.sony.com.au**

A
22
16
11
8
5.6
IRIS LOCK
AF MF
G
E-mount

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NIKON REVIVES ULTRAZOOM FIXED LENS CAMERA

THE GODZILLA OF fixed-lens cameras is back with Nikon giving the Coolpix P1000 a very mild upgrade to make the P1100 which shares its predecessor's substantial dimensions, but also the monster 24-3000mm equivalent zoom. Of course, this super supertelephoto reach is only possible because of a smaller sensor size, but the P1100's 1/2.3-inch BSI-type CMOS delivers 16 megapixels effective resolution and has a sensitivity range equivalent to ISO 125 to 6400. The zoom's maximum aperture range is f/2.8-8.0 and the actual focal range is 4.3-539mm.

Despite the small sensor size, the superzoom's optical design means that the P1100 is a big camera and weighs in at 1.41 kilograms. The optical construction employs 17 elements in 12 groups and six of these are extra-low dispersion (ED) types – one is designated 'Super ED' – to help minimise chromatic aberrations.

If 3000mm isn't long enough, up to 12,000mm is available via a 'Dynamic Fine Zoom' function, although this is essentially a digital zoom which crops the image so there's some loss of image quality. The power zoom has two speeds, but there are also dedicated modes for subjects such as the Moon or birds which will automatically zoom in at the push of a button, and both JPEG and RAW capture is available with a maximum shooting speed of up to 7.0 fps.

The P1100 has optical image stabilisation gives up to four stops of correction for camera shake (reduced from five due to new CIPA testing protocols) while a combination of optical and electronic stabilisation operates when shooting video. As before, the P1100 can shoot 4K UHD video at 25/30 fps using the H.264/AVC codec. The Full HD frame rates extend up to 50/60 fps. There's a single memory card slot for UHS-I speed SD devices.

The P1100 offers a full set of 'PASM' exposure modes with a choice of multi-zone (Matrix), centre-weighted average and spot metering patterns plus TTL auto flash control. There is a total of 19 subject modes with the option of auto scene detection. The shutter speed range is 30-1/4000 second with flash sync at all speeds. A separate 'Bulb' mode is available for making long exposures. The camera's built-in pop-up flash is supplemented by a hotshoe.

Autofocusing is via contrast detection with a target-finding mode, face priority and subject tracking. The EVF is a 1.0 cm OLED-type panel with a resolution of 2.36 megadots while the 8.1 cm TFT LCD monitor screen is adjustable for tilt and swing and has a resolution of 921,600 dots. Other notable features include auto exposure bracketing, a dual-delay self-timer, an external microphone input, a 'clean' HDMI video output and an intervalometer.

The new features include USB Type C connection, a Fireworks Show scene mode among the multiple exposure settings (designed to prevent blown-out highlights), long exposure noise reduction, selectable AF areas in the Bird Watching mode, and Bluetooth and WiFi connectivity upgraded to the latest specs (i.e. speed and security). However, with the original model introduced back in 2018 and a lot unchanged in the new P1100, it looks a bit old school in quite a number of areas, but it's still a unique proposition in terms of its supertelephoto powers.

The Coolpix P1100 is priced at $1759 and Nikon Australia provides a two-year warranty for Nikon cameras purchased from an authorised reseller. For more information visit **www.nikon.com.au**

PANASONIC ADDS EXTRA VIDEO FIZZ TO NEW LUMIX S FLAGSHIP

A SUBSTANTIAL UPGRADE in video capabilities is one of the key aspects of the Lumix S1R II, to the point that Panasonic says it's its "best-ever hybrid mirrorless camera". The original S1R was launched back in early 2018 so its replacement has been a long time coming and there's now much stiffer competition among high-end full frame mirrorless cameras, but the overall is extensive, including a new sensor and a more compact body. In terms of size and styling, the S1R II is now much closer to the S5 series cameras so it's both smaller and lighter by around 20 percent which isn't insignificant. A key control revision is the addition of a dedicated selector – at the base of the drive mode dial – to switch between the photo and video operation and also shooting with the slow/quick video frame rates. It's not new in general hybrid camera terms, but new to Panasonic Lumix S and makes for much quicker and easier switching (plus there can be dedicated customised control set-ups for each).

The new BSI CMOS sensor has a slightly lower effective resolution than before – 44.3 megapixels versus 47.3 – but it has a faster read-out (although it's not a stacked design). It has dual gain conversion circuitry with the two base ISOs set at 80 and 400 for photography and 160 and 800 for video, but also varying with V-Log and HLG/HDR recording. With this comes the 'Dynamic Range Expansion' mode which gives an extra stop at the highlight end with V-Log shooting (but isn't the same as the 'DR Boost' function on the GH6 and GH7). Matched with an 'L2 Technology' processor (Panasonic's tech tie-up with Leica), the new sensor enables continuous shooting at up to 40 fps with continuous AF and either full-res RAW or JPEG capture. Pre-burst capture operates for up to 1.5 seconds prior to actual shutter release.

Sensor shifting IBIS gives up to 8.0 stops of correction for camera shake at the centre of the frame and up to 7.0 stops at the edges. With 'Dual I.S 2' and OIS, there's up to 7.0 stops of correction with longer focal length lenses. Pixel-shifting drives a high-res, multi-shot capture mode which has both hand-held and tripod modes, and generates 177 megapixels images in both. Notably, compositing is performed in-camera so there's no post-production processing required. The S1R II has hybrid phase/contrast detection AF – which Panasonic calls 'Phase Hybrid AF' – with AI-based subject recognition and tracking for humans (eyes and faces), animals (including birds), cars, motorcycles and bikes, trains and aircraft.

There are dual memory card slots – one each for CFexpress Type B and SD UHS-II speed types. The bodyshell is magnesium alloy with weather sealing and insulation to enable shooting in subzero temperatures down to -10 degrees Celsius. The OLED EVF has a resolution of 5.76 megadots and delivers black-out free viewing at 40 fps while the monitor's resolution is 1.84 megadots and it had it combines a fully-articulated mount with independent tilt adjustments. There's a new vertical/battery grip called the DMW-BG2 and which adds a second battery pack.

The video specs top out at 8K UHD in the 16:9 aspect) and at 8.1 K which delivers a 17:9 aspect frame, but at 8128x4288 pixels which is just slightly less res than 8K DCI. The 8K recording is at 24/25/30 fps with 10-bit 4:2:0 colour and the H.265 codec. Internal recording in Apple ProRes RAW or RAW HQ is available at up to 5.8K 17:9 or in ProRes 422 or 422HQ, all 24/25/30 fps, but 5.8K can also be recorded at 48/50/60 fps with the H.265 codec and 4:2:0 colour. The full 3:2 aspect sensor area is available for 'open gate' recording at 6.4K for format flexibility and with 7.2K and 8.1K to come via a future firmware upgrade. The full width of the sensor is used for 4K UHD and DCI recording at up to 100/120 fps and with 10-bit 4:2:2 colour, and there's again the option of here of using ProRes 422 or 422HQ at up to 50/60 fps. The electronic image stabilisation (EIS) for video has a new 'cropless' mode which employs lens correction information to correct for camera movement.

Not surprisingly, the S1R II gets all the video goodies that have been introduced with either the S5 IIX or the GH6/7 models; including a waveform monitor, a vectorscope, colour bars and test tone, front and rear tally lamps, USB to SSD external recording support, tethered shooting, a false colour display, support for anamorphic lenses and the 'Real Time LUT' function which allows for the uploading of 'pre-baked' LUTs and the creation of custom-made looks via the Lumix Lab app. New is a 'Cinelike A2' in-camera colour profile (which sits between the existing V2 and D2 modes), proxy recording, Frame.io support and 32-bit 'float' audio recording which requires the XLR2 Microphone Adaptor, but eliminates clipped and distorted audio by automatically shifting levels. There's also a new video app called Lumix Flow which is designed to streamline scripting, storyboarding and shot lists. The S1R II has a built-in cooling fan, enabling it to run for longer when shooting video in higher temperatures.

The Panasonic Lumix S1R II is priced at $5499 body only and is available in Australia now. For more information visit **www.panasonic.com.au** Panasonic Australia offers an extended five year warranty (two year standard warranty plus an additional three years) on Lumix camera bodies sold by an authorised Panasonic Australia reseller.

Nikon
NIKKOR
Z
Z 24-70mm 1:4 S

NIKON'S POPULAR Z5 IS EVEN MORE TASTY WITH ITS MARK II UPGRADE

IT'S CERTAINLY THE most affordable of Nikon's full frame Z mount mirrorless cameras, but you'd hardly call the Z5 an entry-level model and this is even more than case with the Mark II upgrade which introduces both additional new features and various enhancements.

It inherits the 24.5 megapixels BSI-type CMOS sensor that's also used in the Zf and Z6II models and which is mated with Nikon's latest-gen 'EXPEED 7' processor which means there's some significant increases in speed over the previous model. Continuous shooting using the focal plane shutter increases to 14 fps – versus 4.5 fps previously – and JPEG capture is possible at up to 30 fps with the sensor-based shutter and with the option of 'Pre-Release Capture' buffering. The sensitivity range is equivalent to ISO 100 to 64,000 with extensions all the way up to ISO 204,800. As before, there's five-axis sensor-shifting image stabilisation, but the effectiveness increases to 7.5 stops of correction for image shake at the centre of the frame and up to 6.0 stops at the edges. The Z5II also adds 'Focus Point VR' which centres the IBIS on the active AF point or area. Sensor shifting is also used to deliver high-res 'Pixel Shift' multi-shot capture giving 96 megapixels, but the compositing still has to be done post-camera using Nikon's free NX Studio software.

The extra speed also benefits the new camera's video capabilities with the 4K UHD recording at 25/30 fps now without a crop factor and with the choice of 10-bit 4:2:2 recording in the H.265 codec plus 12-bit N-RAW which can be recorded in-camera to an SD memory card (a first for any Z mount camera). There's also an N-Log profile for more flexibility with post-production colour grading and, thanks to Nikon's ownership of cinema camera maker RED, the RED cinematic LUTs are available for free uploading to the Z5II. A 1.5x crop applies when shooting 4K UHD at 50/50 fps. Full HD footage can be recorded at up to 100/120 fps (using the 8-bit H.264 codec) for slowmo effects. The Z5II has dual memory card slots for SD devices, both with UHS-II speed support.

The Z5II also gets all the developments that have taken place in autofocusing since its predecessor was introduced in 2020 so there's now nine subject recognition modes – included one dedicated to birds – and much more flexibility with setting the shape and size of the AF detection area. The detection for humans covers eyes, faces, heads and the upper body. Also added to the Mark II camera is the '3D Tracking AF' mode for more reliable tracking of subjects not covered by the recognition modes. The Z5II is also the first full frame Nikon mirrorless body with the 'AF-A' auto switching between the single shot and continuous AF modes (which used to be a common feature on Nikon's DSLRs). The AF's low light sensitivity now extends down to -10 EV (at ISO 100 and f/1.2) and there's both a 'Starlight View Mode' for shooting in very low light situations plus 'Warm Colour Display Mode' which helps preserve your night vision when working in complete darkness. Obviously, the AF speed also benefits from the faster processor, ensuring faster response times and more reliable tracking, especially with faster-moving subjects.

Another notable update is a much-expanded selection of 11 'Picture Control' presets, including Flat Monochrome, Deep Tone Monochrome and Rich Tone Portrait which were introduced with the Zf. Additionally, there's 20 'Creative Picture Control' settings – which are essentially special effects – and the 'Flexible Color Picture Control' for downloading custom profiles created in NX Studio (and which allows much more scope for fine-tuning than the in-camera adjustments). As on the 'APS-C' format Z50II, there's a dedicated button to directly access the 'Picture Controls'. The Z5II joins the rest of the more recent Z mount models in having 10-bit HEIF capture in addition to 8-bit JPEGs and 14-bit RAW files.

The camera's construction comprises magnesium alloy covers over a GRP chassis with sealing against moisture and dust. The EVF is an 1.27 centimetres OLED panel with a resolution of 3.69 megadots, a magnification of 0.8x and a quoted brightness of 3000 cd/m which Nikon claims is "six times brighter than any competing model". The TFT LCD monitor screen is fully articulated and has a resolution of 2.1 megadots with touchscreen controls.

The Nikon Z5II is priced at $2699 for the body only or $3249 packaged with the compact Nikkor Z 24-50mm f/4.0-6.3 standard zoom lens. Nikon Australia provides a two-year warranty for Nikon cameras and lenses purchased from an authorised reseller. For more information visit **www.nikon.com.au**

NIKON DEBUTS FIRST FULL FRAME Z MOUNT POWER ZOOM

PRIMARILY AIMED AT professional video-makers and cinematographers, the Nikkor Z 28-135mm f/4.0 PZ is the company's first full frame power zoom. Of course, it can also be used for still photography, but the motorised zoom operation – which is adjustable for speed – is a feature most beneficial when shooting moving pictures. There is, in fact, a choice of 11 zooming speeds to suit different creative requirements. However, a manual zooming collar is retained and its direction of rotation can be set to either left or right. As zooming is performed internally, Nikon says the lens is designed to minimise shifts in the centre of gravity when zooming, and that its supports a variety of video accessories such as follow-focus controllers and matte boxes.

The optical construction comprises 18 elements in 13 groups with a total of these being special types – three with extra-low dispersion (ED) characteristics, four with aspherical surfaces and one which is both aspherical with ED glass. The special elements correct for distortion and reduce chromatic aberrations. The power zoom's optical design also helps minimise focus 'breathing'. Nikon's 'Meso Amorphous Coat' anti-reflection multi-coating reduces both ghosting and flaring. The minimum focusing distance is 34 centimetres at 28mm to 50mm and 57 centimetres at the longer focal lengths. Focusing is also performed internally using a stepper-type motor. The external construction is described as being "dust and drip resistant" and there's a fluorine coating on the front help to help repel moisture and grease. A new design feature is a yellow ring around the lens mount along with bolder cine-type lens markings. The screwthread filter fitting is 95 millimetres and the lens is supplied with a rectangular lens hood which allows for the adjustment of polariser or variable ND filters.

POWER ZOOM
NIKKOR
28-135/4 PZ

The Nikkor Z 28-135mm f/4.0 PZ is priced at $3399 and will be available in April. Nikon Australia provides a two-year warranty for Nikkor Z mount lenses purchased from an authorised reseller. For more information visit **www.nikon.com.au**

FUJIFILM REPRISES FIXED-LENS MEDIUM FORMAT CAMERA

FUJINON ASPHERICAL LENS
SUPER EBC GF f=35mm 1:4

FROM THE LATE 1970s onwards, Fujifilm produced a long line of medium format rollfilm cameras with fixed lenses in 6x4.5cm, 6x7cm and 6x9cm image sizes. The line culminated in 1998 with the GA645Zi which was essentially a medium format point-and-shoot 'compact' camera with a zoom lens, a built-in flash and fully automatic operation. Now this concept has been revisited in the digital era with the GFX100RF which is pretty much a medium format version of the hugely popular X100-series 'APS-C' format fixed-lens compacts

The GFX100RF has the same 'GFX 102MP CMOS II' sensor and 'X-Processor 5' engine as the GFX100S II, but in a significantly more compact body with a fixed Fujinon Super EBC 35mm f/4.0 prime lens that's effectively a 28mm. As before, the '33x44' format sensor has an effective pixel count of 102 million which gives considerable scope for cropping without unduly compromising image quality and Fujifilm makes use of this with a new control called the 'Aspect Ratio Dial' which gives quick access to a selection of nine image aspects for use with JPEG capture… including a panoramic 65:24 (i.e. 2.7:1) as per the Hasselblad XPan which, of course, was actually a Fujifilm camera called the TX-1. Furthermore, there's a choice of three crop settings which equate to the effective focal lengths of 35mm, 50mm and 63mm with image resolutions of 62, 31 and 20 megapixels respectively… and, incidentally, sensor sizes equivalent for full frame, 'APS-C' and Micro Four Thirds. These can also be selected directly from the camera body via the 'Digital Teleconverter Lever'.

Like the Leica Q models with a 28mm lens, Fujifilm has selected the focal length for its combination of angle-of-view, cinematic visual qualities and compactness of design. The optical design comprises ten elements in eight groups which includes two aspherical types and it incorporates a leaf-type shutter. An indication of its small size is that the screwthread filter fitting is only 49 millimetres (as on the X100 models, fitted via an adaptor ring). The GFX100RF weighs only 735 grams in total which, incidentally, is 40 grams lighter than the GFX50R's body alone. The control layout is quite similar to that of an X100 camera, including a large shutter speed dial and a smaller one for applying exposure compensation. The shutter release button incorporates a screwthread fitting for a traditional cable release. On the lens are control rings for manual aperture setting and manual focusing. The camera is weatherproof in the same way as the X100VI; in other words, total protection requires a filter on the lens.

To keep the size down, there's no image stabilisation in either the lens or the body, but the leaf shutter will help minimise vibrations and, of course, it's possible to shoot with a sensor-based shutter which is also completely silent. The leaf shutter has a speed range of 60 minutes up to 1/4000 second with flash sync at all speeds. The sensor shutter runs up to 1/16,000 second and the lens's minimum aperture is f/22. The camera also has a built-in ND filter with a four-stop range. The sensitivity range is equivalent to ISO 80 to 12,800 with extensions either side to ISO 40 and 102,400. Continuous shooting is possible at up to 6.0 fps with the leaf shutter and 3.0 fps with the sensor shutter. The capture modes include 10-bit HEIFs and 14-bit or 16-bit RAWs (compressed, lossless compressed or uncompressed, and the GFX100RF has dual slots for SD memory cards with UHS-II speed support.

The hybrid autofocusing system is the same as has been seen in all the latest G and X mount cameras; namely 425 selectable measuring points with subject recognition and tracking for people, animals, birds (which includes insects), cars, motorcycles and push bikes, trains and aircraft (which includes drones). The lens's minimum focusing distance is 20 centimetres. Also as with the ILCs, there's the full current crop of 'Film Simulation' profiles, including the most recent Nostalgic Neg and Reala Ace settings.

The EVF is a 1.27 centimetres OLED EVF with 5.76 megadots resolution and 0.84x magnification. The monitor is an 8.0 centimetres TFT LCD panel with a res of 2.1 megadots and up/down tilt adjustments, but again presumably to save space, not the three-way tilt that's on some other GFX100 series cameras.

The key video specs are 4K UHD/DCI at up to 25/30 fps with 10-bit 4:2:2 colour in the H.265 codec with All-Intra compression, and 2K FHD/DCI up to 50/60 fps. Bit rates can be up to 720 Mbps and the Apple ProRes 422/HQ/LT codecs are available for external recording over USB C to an SSD. There also the Fujifilm Log-F and F2 profiles, electronic image stabilisation (which involves a 1.32x crop), Frame.io Camera to Cloud support, and a four-channel XLR mic input via the appropriate adapter module.

Not surprisingly, all this comes at a price which is $8799, but obviously you're getting a lens as well. There's a choice of black or silver finishes. For more information visit **www.fujifilm.com.au**

PHOTOGRAPHY EXHIBITIONS & EVENTS

Current to 1 June: Exhibition. *If Only We Could Take The Time: Contemporary Australian Photography.* This exhibition considers how the impulse to observe, to record and to share continues to propel photographic practice in Australia today. Works by Ying Ang, Katrin Koenning and Anu Kumar. Entry is free. Gallery hours are 10.00am to 5.00pm daily. For more information visit **https://www.portrait.gov.au**

Current to 1 July: Exhibition. *Student Life: Max Dupain At The University Of Sydney.* Max Dupain (1911-1992) documented student life at the University in the early 1950s creating a brilliant and frequently hilarious series of candid photographs. At the Chau Chak Wing Museum, University Place, University Of Sydney, Camperdown, NSW 2006. Entry is free. Museum hours are 10.00am to 5.00pm ion weekdays and 12.00pm to 4.00pm on weekends. For more information visit **https://whatson.cityofsydney.nsw.gov.au/events/**

Current to 13 July: Exhibition. *New Light: Photography Now + Then.* An exhibition where past and present converge in a mesmerising display of photography spanning 1890 to 2024, including works by Brisbane photographer Alfred Henrie Elliott (1870-1954). At the Museum Of Brisbane, Level 3, Brisbane City Hall, King George Square, Brisbane, Queensland 4000. Entry is free. Exhibition hours are 10.00am to 5.00pm daily. Closed Good Friday. For more information visit **https://www.museumofbrisbane.com.au**

Current to 20 July: Exhibition. *Fit To Print: Defining Moments From The Fairfax Photo Archive.* Press and documentary photographs selected from the collection of the National Library and curated by photojournalist Mike Bowers, who was photo editor at the Herald and Herald Sun newspapers between 2001 and 2009. At The Exhibition Gallery, National Library Of Australia, Parkes Place, ACT 2600. Entry is free. Exhibition hours are 9.00am to 5.00pm daily. For more information visit **https://www.library.gov.au**

Current to 31 December: Exhibition. *PIX: The Magazine That Changed Everything.* PIX was Australia's first pictorial news weekly and hit newsstands in January 1938. It delivered a new style of journalism, using photographs to tell daring stories of modern life. At the Photography Gallery, State Library Of NSW, 1 Shakespeare Place, Sydney, NSW 2000. Entry is free. Exhibition hours are 9.00am to 8.00pm Monday to Thursday, 9.00am to 5.00pm on Friday, 10.00am to 5.00pm on weekends. For more information visit **https://www.sl.nsw.gov.au**

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OM-1 Mark II

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VIDEO EASY WITH CANON'S NEW VLOGGING CAMERAS

THE INFLUENCER BUSINESS is apparently also big business and Canon estimates it will be worth a massive $500 billion globally by 2027. Assuming that they're not using their smartphones, influencers need easy-to-use video cameras and Canon is coming to this party with a new PowerShot V series model – the V1 – which is a more conventionally designed camera than the existing V10 – and video-centric version of the EOS R50 which will compete with similar models from Fujifilm, Nikon, Panasonic and Sony.

Like its direct competitors, the EOS R50 V doesn't have a viewfinder and so centres all its operations on its 7.5 centimetres vari-angle monitor touchscreen with the controls and feature set both orientated towards vlogging and self-recorded video presentations. So, for example, there's a video start/stop button on the front panel and tripod socket on the side for shooting video in the vertical orientation for mobile device applications. There's also a 'Product Demo' AF mode which automatically switches the focus between the presenter and the product being presented. The EOS R50V records 4K UHD video – oversampled from and with 10-bit 4:2:2 (YCC) colour – uncropped at 25/30 fps and with a 1.5x crop at the faster 50/60 fps frame rates. Full HD video can be recorded at up to 100/120 fps. There's the option of recording in the C-Log3/Cinema Gamut profile for post-camera colour grading, and the camera has a selection of cinematic 'Colour Mode' settings. Additionally, up to 15 LUTs can be uploaded in the .CUBE file format. For audio, the R50 V has built-in stereo microphones plus a stereo audio input and an output for connection monitoring headphones. Additionally, the camera has Canon's multi-function power/data communications shoe for attaching dedicated accessories such as microphones.

The compact body has magnesium alloy covers (but is not sealed) and weighs in at 370 grams. Not surprisingly, the sensor is the same 24.2 megapixels 'APS-C' imager as is used in the standard EOS R50, and mated with the 'DiG!C X' processor. The R50 V has Canon's 'Dual Pixel CMOS AF II' phase-detection autofocusing system with subject recognition which includes eye/face/head/body detection for humans. There's also the 'Register People Priority' function that was introduced with the EOS R5 II and allows for up to ten faces to be stored so the camera will recognise them whenever they appear in any scene.

Accompanying the R50 V is a new 'APS-C' power zoom called the RF-S 14-30mm f/4.0-6.3 IS STM PZ. The effective focal range is 22-48mm and the power zooming operation is performed internally so the lens doesn't change in length. It also features optical image stabilisation which gives up to five stops of correction for camera shake.

The new PowerShot V1 matches a 22.3 megapixels 1.4-inch CMOS sensor with a 16-50mm-equivalent zoom and can record 4K UHD video at up to 50/60 fps (with a 1.4x crop). The sensor size is actually very close to Micro Four Thirds, but with a 3:2 aspect ratio. Interestingly, the V1 has a built-in cooling fan for extended shooting which Canon says will allow for up to hours of recording at 4K/60p in an ambient temperature of 30 degrees Celsius. The V1 has many of the features of the R50V including the cinematic colour modes, 'Dual Pixel CMOS AF II' focusing with subject recognition, the multi-function hotshoe and C-Log3 flat profile recording.

The Canon PowerShot V1 is priced at $1449 and the EOS R50 V at $1169 for the body only or $1499 packaged with the RF-S 14-30mm f/4.0-6.3 IS STM PZ power zoom. Both are available locally now. Canon Australia provides a five-year warranty for cameras and lenses purchased from an authorised reseller. For more information visit **www.canon.com.au.**

SIGMA GOES LONGER WITH NEW ULTRAZOOM FOR 'APS-C' MIRRORLESS

ULTRAZOOMS HAVE BEEN a bit of a Tamron speciality, but Sigma is now going further with its new 16-300mm f/3.5-6.7 DC OS Contemporary for the 'APS-C' sensor size and which has an effective focal range of 24-450mm. Sigma says it's the world's first mirrorless lens with a zoom ratio of 18.8x for 'APS-C' cameras. It spans wide-angle to supertelephoto in the one lens which boasts pretty decent close focusing capabilities, delivering a reproduction ratio of 1:2 – that's half life size – at the 70mm focal length. It's still 1:3 at the wide-angle end and 1:4 at the maximum telephoto focal length. What's more, it's a pretty compact lens with a barrel length of around 121 millimetres and weighing in at 610 grams (both these measurements vary slightly according to the lens mount). The barrel extends quite a bit when the lens is zoomed out, but it's still a very manageable package and the scope for hand-held shooting is increased by built-in optical image stabilisation which gives up to six stops of correction for camera shake at 16mm and 4.5 stops at 300mm.

The external construction is weather sealed with a water-repellent coating on the front element.

16 24 35 50 70 100 300
16-300mm 1:3.5-6.7 DC OS ⌀67
SIGMA

The optical construction has 20 elements in 14 groups which includes eight special types – four aspherical, one 'FLD' and three 'SLD'. These latter four all have low-dispersion characteristics to help minimise chromatic aberrations, but Sigma's 'FLD' elements – the initials stand for F Low Dispersion – are designed to have the same super extra-low dispersion characteristics of fluorite glass, but without being as expensive to manufacture. Sigma says that the optical design also helps suppress focusing 'breathing' so the image size remains the same across the focusing range. The focusing group is driven by Sigma's 'High-Response Linear Actuator' (HLA) motor so it's both fast and precise. The minimum focusing distance is 17 centimetres at 16mm, extending to 105 centimetres at 300mm. The minimum aperture range is f/22-45.

Other features of the Sigma 16-300mm include a nine-blade diaphragm, a zoom lock and a 67 millimetres diameter screwthread filter fitting. A bayonet-fit lens hood is supplied.

The Sigma 16-300mm f/3.5-6.7 DC OS Contemporary is priced at $1400 and is available in the Fujifilm X, Canon RF, Sony E and L mounts. Sigma products are distributed in Australia by C. R. Kennedy Photo Imaging and for more information visit **https://sigmaphoto.com.au**

SIGMA'S NEW 'DREAM LENS' SUPERTELEPHOTO ZOOM

ANNOUNCED ALONG WITH the BF camera body, the Sigma 300-600mm f/4.0 DG OS Sports was announced as "a dream lens" and it almost certainly is for many sports and wildlife photographers. For starters, there's the constant maximum aperture of f/4.0, but also optical image stabilisation giving up to 5.5 stops of correction for camera shake (at 600mm), and a physical size and weight that makes hand-holding feasible (albeit perhaps only for short periods of time). The icing on the cake is affordability with a price tag that is significantly less than the f/4.0-speed 600mm mirrorless system primes from either Canon or Nikon… and also Sony with which it will compete directly as it's available in the FE and L mounts.

The 300-600mm is just under 47 centimetres in length and weighs in at 3.985 kilograms. Consequently, the zoom is very similar dimensionally to a 600mm prime lens. Zooming and focusing are performed internally so the length of the lens doesn't extend. The main construction uses magnesium alloy barrel tubes and is weather sealed along with a fluorine coating on the front element to help repel moisture and grease.

The optical design comprises 28 elements in 21 groups which includes six of Sigma's 'FLD' types and one 'SLD' type. The 'FLD' elements – F Low Dispersion – are designed to have the same super extra-low dispersion characteristics of fluorite glass without being as expensive to produce. Along with the 'SLD' elements, these significantly reduce chromatic aberrations and enhance overall sharpness. The autofocusing drive employs a high-thrust 'HLA' (High-Response Linear Actuator) motor to enable very fast adjustment (but an fps rate isn't quoted). The minimum focusing distance is 2.8 metres. The on-barrel controls include four focus lock buttons, a focus limiter switch and an OIS mode selector. Additionally, there's a new control collar which has two modes – Focus Preset and Power Focus. The former enables an instant shift to a pre-registered distance setting, and the latter allows for focusing at a constant speed which is particularly desirable when shooting video.

The Sigma 300-600mm zoom has a drop-in holder at the rear for 40.5 millimetres diameter filters (and which enables circular polariser adjustments), a 13-blade diaphragm and a carbonfibre lens hood

The Sigma 300-600mm f/4.0 DG OS Sports is priced at $12,995 and is available now. It's available in the Sony FE and L mounts. Sigma products are distributed in Australia by C. R. Kennedy Photo Imaging, and for more information visit **https://sigmaphoto.com.au**

BRIEF EXPOSURES

At the launch of the BF camera, **Sigma** announced it's dropping the 'DN' initials from all new lenses as there will be no new models in the future for DSLRs. 'DN' indicated that a lens was designed for mirrorless cameras, but as this will be exclusively the case from now on, it's no longer necessary. Both the 'APS-C' 16-300mm and the full frame 300-600mm zooms – which were announced alongside the BF – have commenced the new markings scheme. The 'DC' and 'DG' designations – which indicate the format; 'APS-C' and full frame respectively – will still be used in lens model numbers.

PRO-310
Canon

NEW 13-INCH CANON IMAGEPROGRAF PHOTO PRINTER HAS HIGH IQ

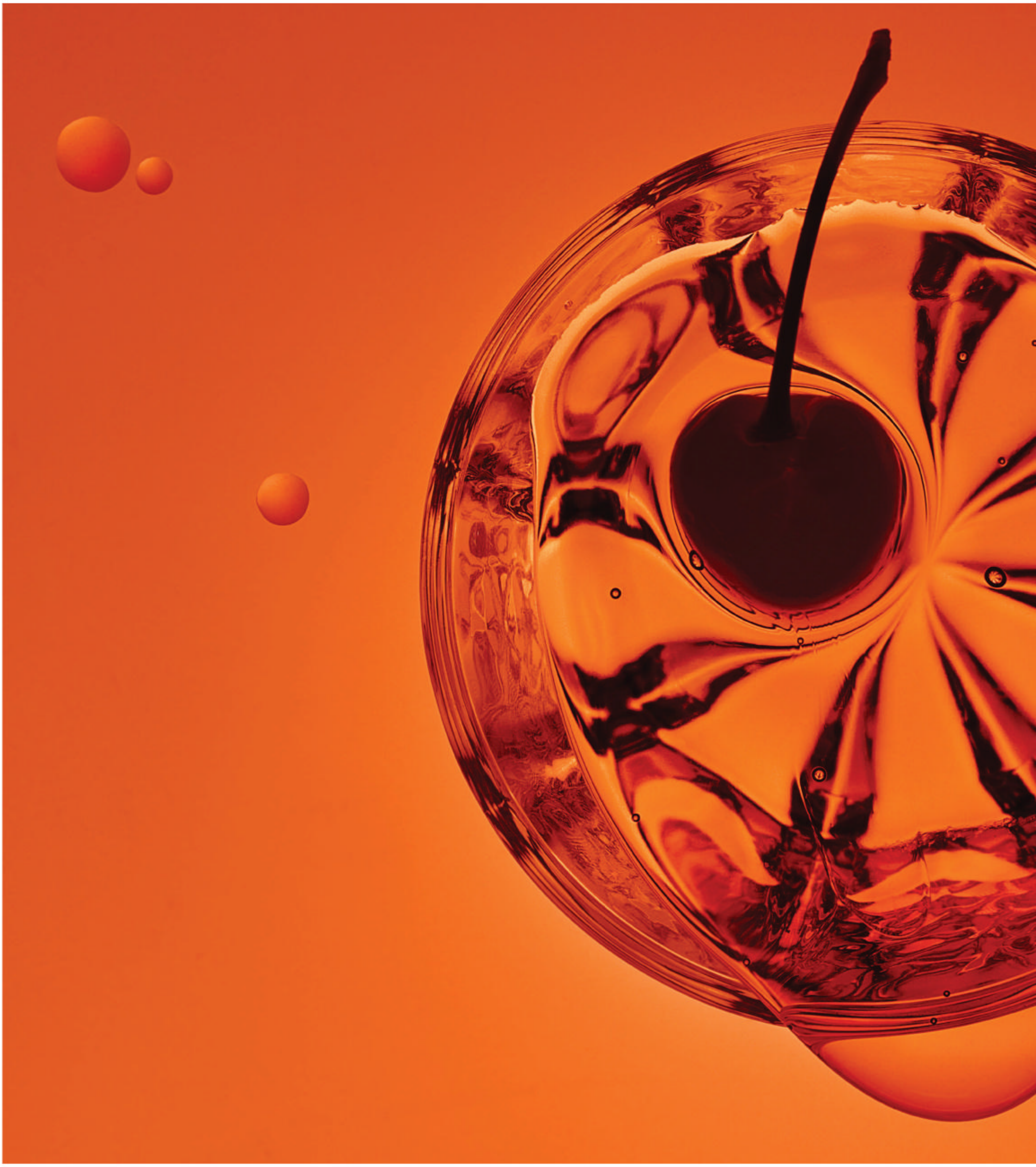
USING CANON'S LUCIA Pro II pigmented inks, the imagePROGRAF PRO-310 is a new nine-colour desktop model for making high quality colour and B&W prints. The latest-generation Lucia Pro II inks provide a claimed light-fastness of up to 200 years, and have a special wax added to give increased resistance to abrasions and scratches. The ink colours include photo cyan, red and photo magenta to provide a wider colour gamut along with smoother tonal gradations. The combination of grey and black inks enhance B&W print quality with automatic switching between matte black and photo black depending on the media surface being used. The PRO-310 ink set additionally has Canon's 'Chroma Optimiser' coating to help eliminate bronzing and moderate reflections with glossy papers. The ink cartridges have a capacity of 14.4 millilitres.

The printer can handle paper sizes from 3.5x5.0 inches up to A3+ (i.e. 13x19 inches) with borderless printing and the option of producing panoramas up to 180 centimetres wide. It can also handle a wide range of media types, including fine-art papers up to 380 gsm.

The 'FINE' print head has a total of 7680 total nozzles (i.e. 768 for each of the ten ink channels) and delivers a resolution of 4800x2400 dpi. The minimum droplet size is four picolitres. Canon's 'Nozzle Recovery' system automatically detects and clears blocked nozzles. Additionally, 'Skew Correction' technology ensures paper sheets are always fed into the printer precisely aligned.

The PRO-310 can be set-up and controlled via a 7.5cm colour LCD monitor display which also shows the ink level in each cartridge. It is compatible with Windows, Mac, Chrome OS, iOS and Android mobile devices, and can be connected via USB, Ethernet or WiFi (both 2.4 GHz and 5.0 GHz). Canon's Professional Print & Layout software is plug-in for Photoshop and Lightroom along with Canon's own Digital Photo Professional (DPP), providing a seamless printing workflow to enhance efficiency and productivity. Additionally, the printer's 'L-COA PRO' image processing engine is able to process large volumes of image data very quickly.

The Canon imagePROGRAF PRO-310 is priced at $1199 and available in Australia now. For more information visit **www.canon.com.au**



CHEERS!

The Picture

Titled *Mr Manhattan*, this graphic image is shortlisted in the World Food Photography Awards sponsored by Tenderstem® Bimi® Brocollini. It is an entry in the competition's World Of Drinks category.

The Photographer

Ben Cole is a Sydney-based advertising photographer who specialises in food and beverages, and is considered one of Australia's leading photographers in these fields. Born in South Korea, Ben operates a commercial photography

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Photograph by Ben Cole, Australia, World Food Photography Awards 2025, copyright 2025.

The Story

Inspired by the tasting notes of the classic Manhattan cocktail, this image captures a bold, warm and sweet note. Through a deconstructed, abstract approach, the image unfolds in layers, each elevated to create depth and intrigue. Looking into the bottom of the glass, the composition reveals a narrative… whether it is the promise of a night yet to come or a moment of reflection on the night that's already been.

To see more of Ben Cole's photography visit **www.bencole.com.au** To view all the finalists in this year's World Food Photography Awards go to **www.worldfoodphotographyawards.com/**

studio in the northern Sydney suburb of Artarmon, and which includes a fully-equipped kitchen.

"Over the years, I have continuously adapted to industry changes, working closely with clients to bring my unique vision to life through technical skill and creative innovation. It has been an honour to collaborate with so many incredible creatives, agencies, brands, and international companies, and I am excited to see what new projects and creative directions the future holds."

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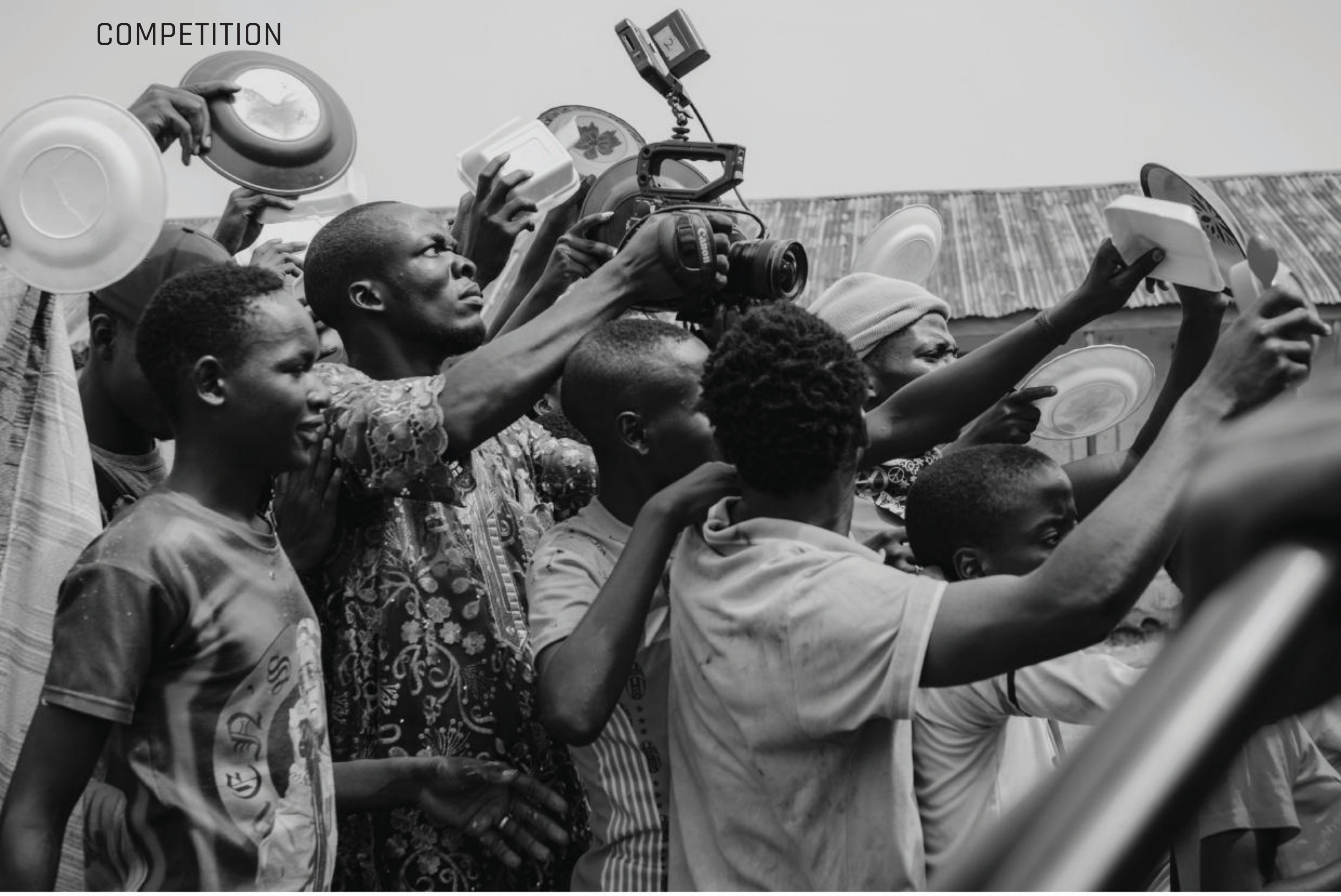


TIPA PHOTO CONTEST – CAMERAMORE

The latest TIPA photography competition again explores the relationship that we photographers have with our cameras… and it's all about luuuurve. The theme was camerAmore – camera love – and many entrants found interesting ways to depict just what they feel about their beloved cameras, old and new.

▲ *Behind The Scenes At A Film Production* by Vurzie Kim (Nigeria), overall winner of the TIPA *camerAmore* Photo Contest. This image also won the 'My Camera In Action' category.

How much do you love your camera? The Technical Image Press Association's latest photo competition was titled camerAmore and challenged entrants to get passionate about their camera gear. Entries were invited in three categories titled 'My Camera In Action', 'My Camera And I' and 'What's In My Camera Bag'.

Thousands of images were received via the Picter Website from photographers from the four corners of the world, proving the worldwide reach of the TIPA member magazines and Websites.

Thomas Gerwers, who is the Chairman of TIPA, commented, "Cameras are like musical instruments: they only unfold their magic in the hands of a creative and skilful user. But without them, neither sounds nor images are created, proving that both are a crucial element in the creative process. And that's why musicians and photographers alike have a special relationship with their instruments, which is reflected in the winning pictures of our competition".

Judging was by a panel of experts composed of TIPA members who all complimented the range of techniques and visions displayed by the worldwide array of photographers who entered the contest. Along with the prize winners, a special shortlist of additional images in each category were named as Honorable Mentions.

Thomas added, "We were very pleased to receive so many submissions from photographers around the world. The wide range of techniques and personal points of view displayed the incredibly creative eye fostered by the art and craft of photography, and, as importantly, highlights the very personal relationship between photographers and their gear.

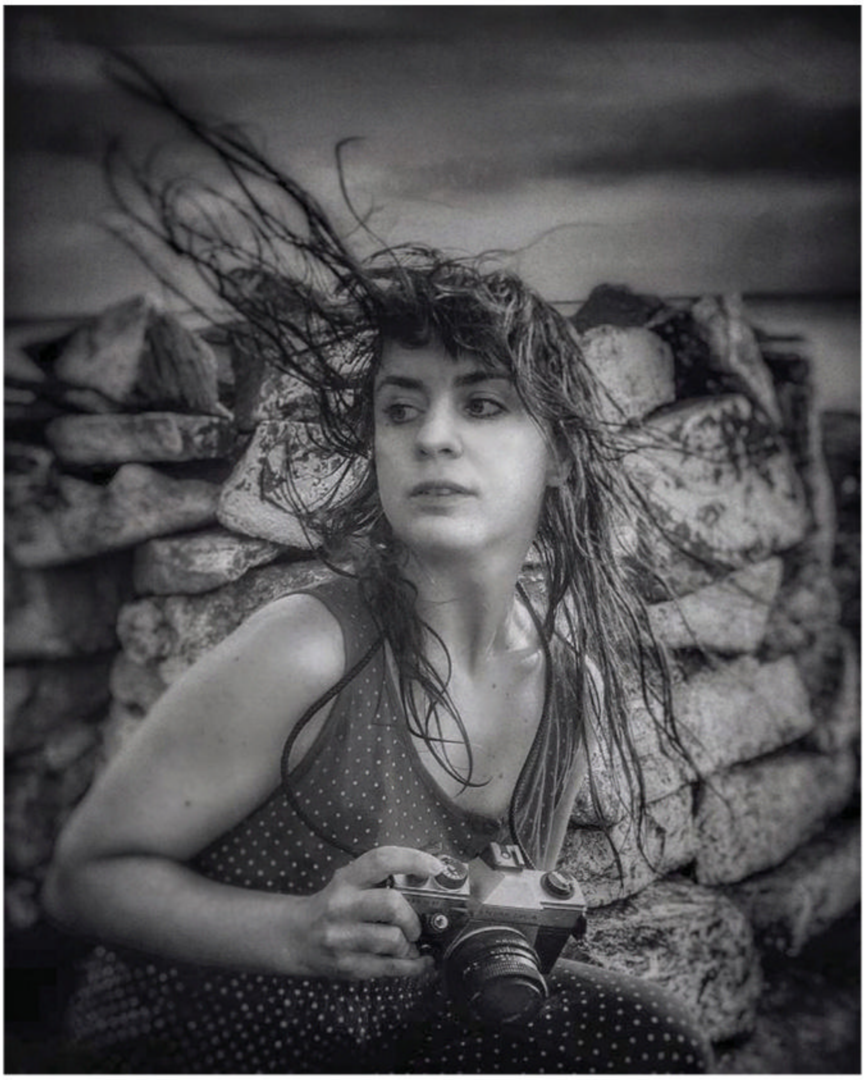
"It proves that images and ideas, coupled with the tools of creativity, create a powerful means of engaging in personal expression and awareness. We salute the winners and sincerely thank all who participated in our *camerAmore* contest and have already begun plans for future such events."

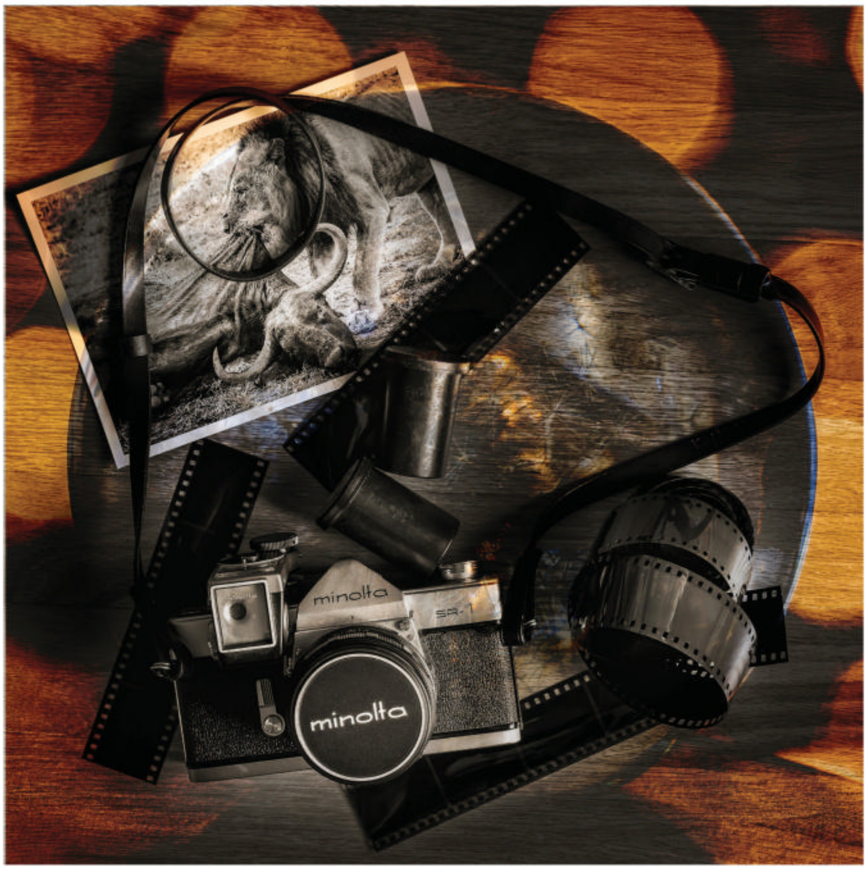
Storytelling

The overall winner was selected from the three category winners and the grand prize this year was awarded to Vurzie Kim from Nigeria whose image – titled Behind The Scenes At A Film Production – topped the 'My Camera In Action' category.

▶ **Above** *Vintage And I* by Tinna Björk Indigodóttir (Iceland), winner of the 'My Camera And I' category in the TIPA *camerAmore* Photo Contest.

▶ **Below** *It's My Party* by Paula Brown (Canada), winner of the 'What's In My Camera Bag' category in the TIPA *camerAmore* Photo Contest.





Vurzie Kim is a photographer and visual artist. She sees her art as a visual representation of how people and nature co-exist every day. "It's a wonderful experience to document," she says.

She's greatly inspired by the works of Gordon Parks and Roy DeCarava, among other great photographers. She has always been fascinated by people and nature… how they behave, how they grow, how they come alive in different seasons. "It's intriguing and it triggers a spark to explore and know more," she explains. Vurzie wants people to see the most mundane things from different perspectives and be able to tell their stories about them or draw inspiration from them. For the past three years, she has been around her community – in Kaduna, Nigeria – to document and focus her storytelling on people living their daily lives and in their personal spaces. She recently exhibited a project on *Community And Food* during the Kaduna International Photo Festival.

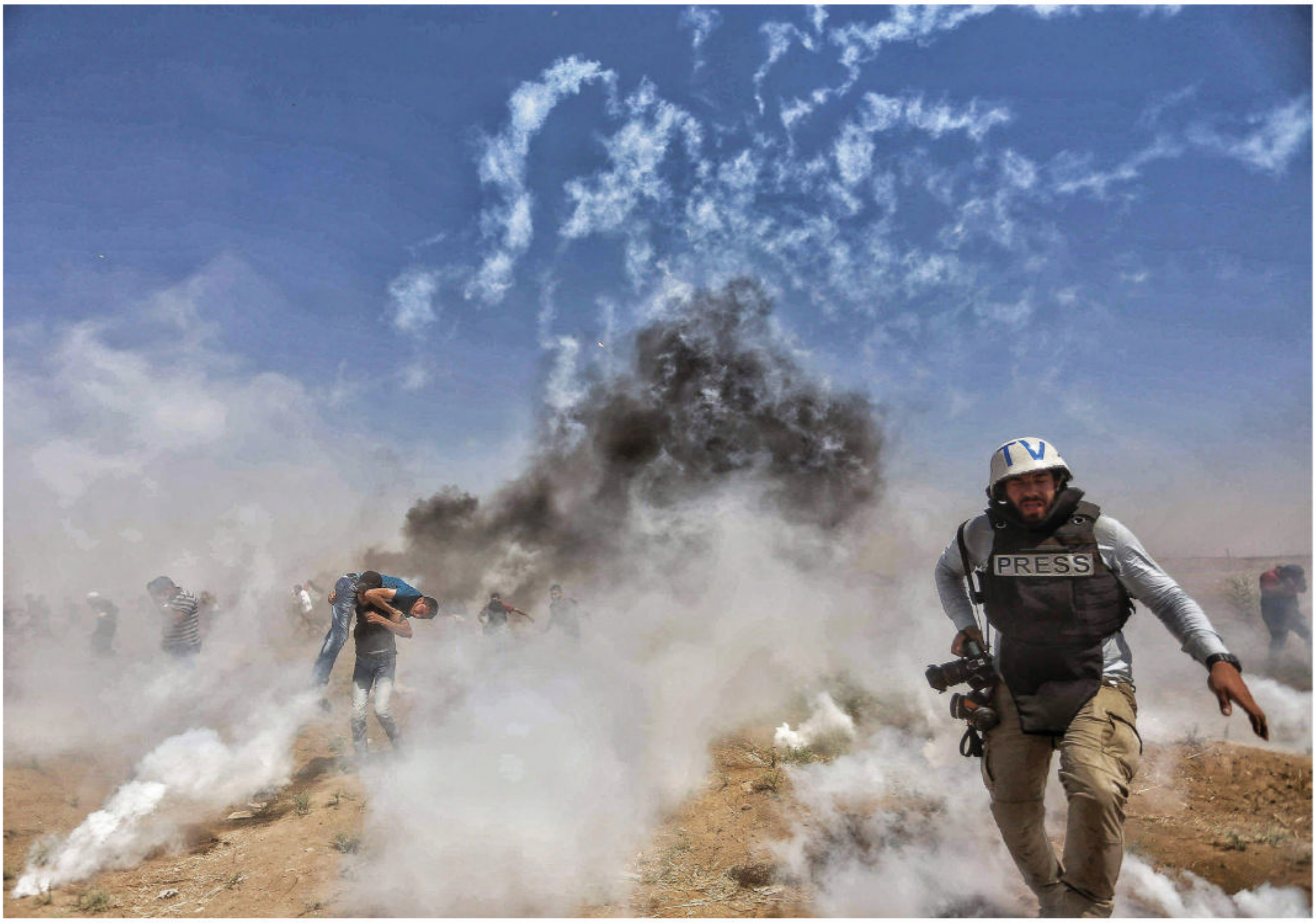
The 'My Camera And I' category was won by Tinna Björk Indigodóttir from Iceland with her image titled *Vintage And I.*

Tinna explains what motivates her to take photographs. "Born with the adventurous spirit of my Icelandic heritage, I am a multidisciplinary artist working with photography, film, dance and performance. My work is shaped by personal experiences and playfulness, often blending beauty with meaning as a call for change. Guided by creative instinct, I also explore themes of absurdity and 'invisible' abuse, shining a light on issues such as microplastics and social inequities. Ultimately, I create to challenge perceptions, and most of all to inspire a bit of wonder in the world or sometimes even make you laugh."

The 'What's In My Camera Bag' category was won by Canadian photographer Paula Brown with her picture titled *It's My Party*

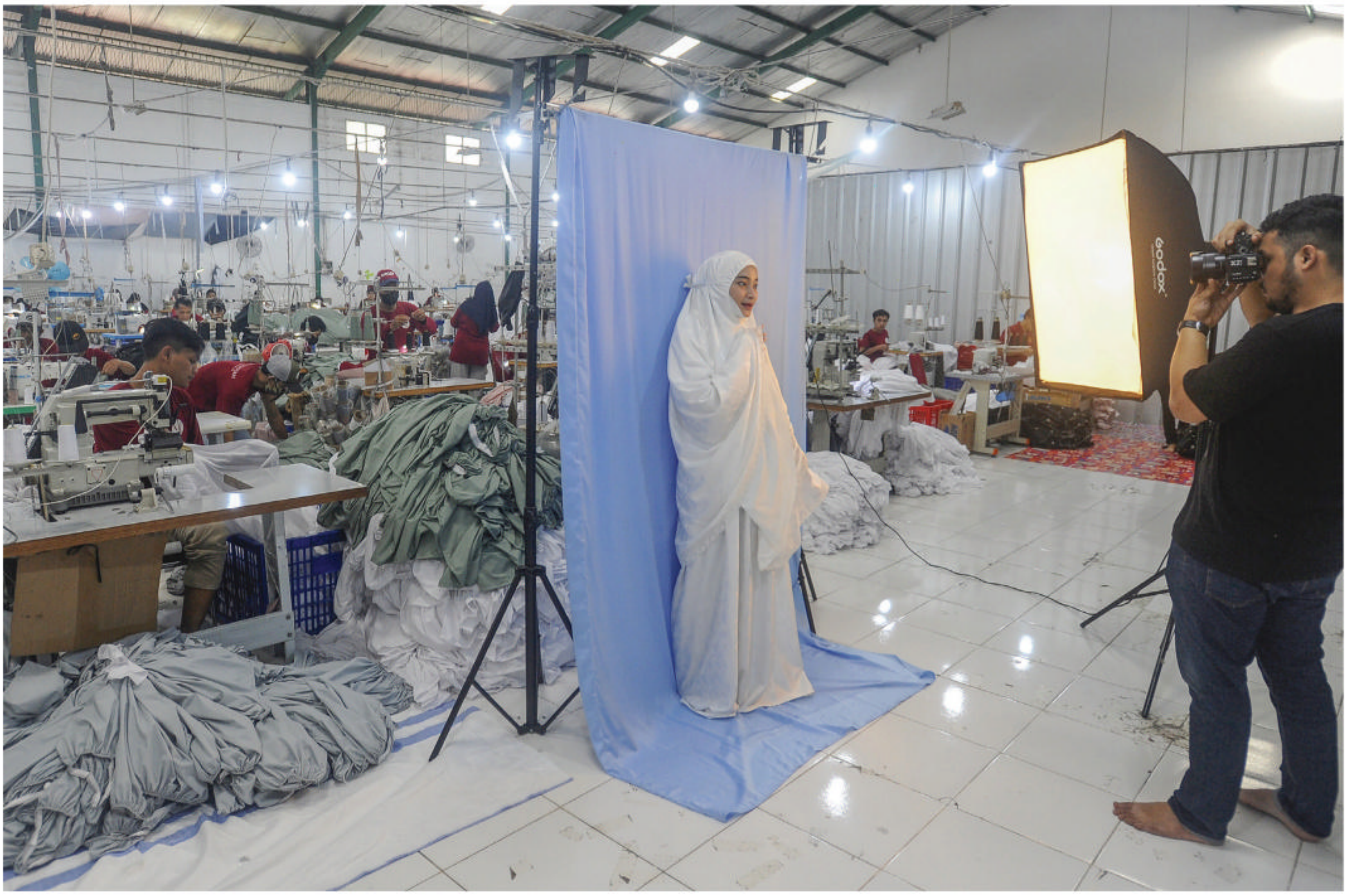
She explains, "I love my old camera, and this one was given to me by a friend. The freedom to explore and create is so important to me. My photography expresses who I am and where my mind goes for creative relief away from life's struggles. I have always loved taking pictures from my career in x-ray technology to my passion in photography. Learning new imaging and processing techniques plus the challenge of new photographic ideas with my own personal twist is always filling my brain. A very active place!"

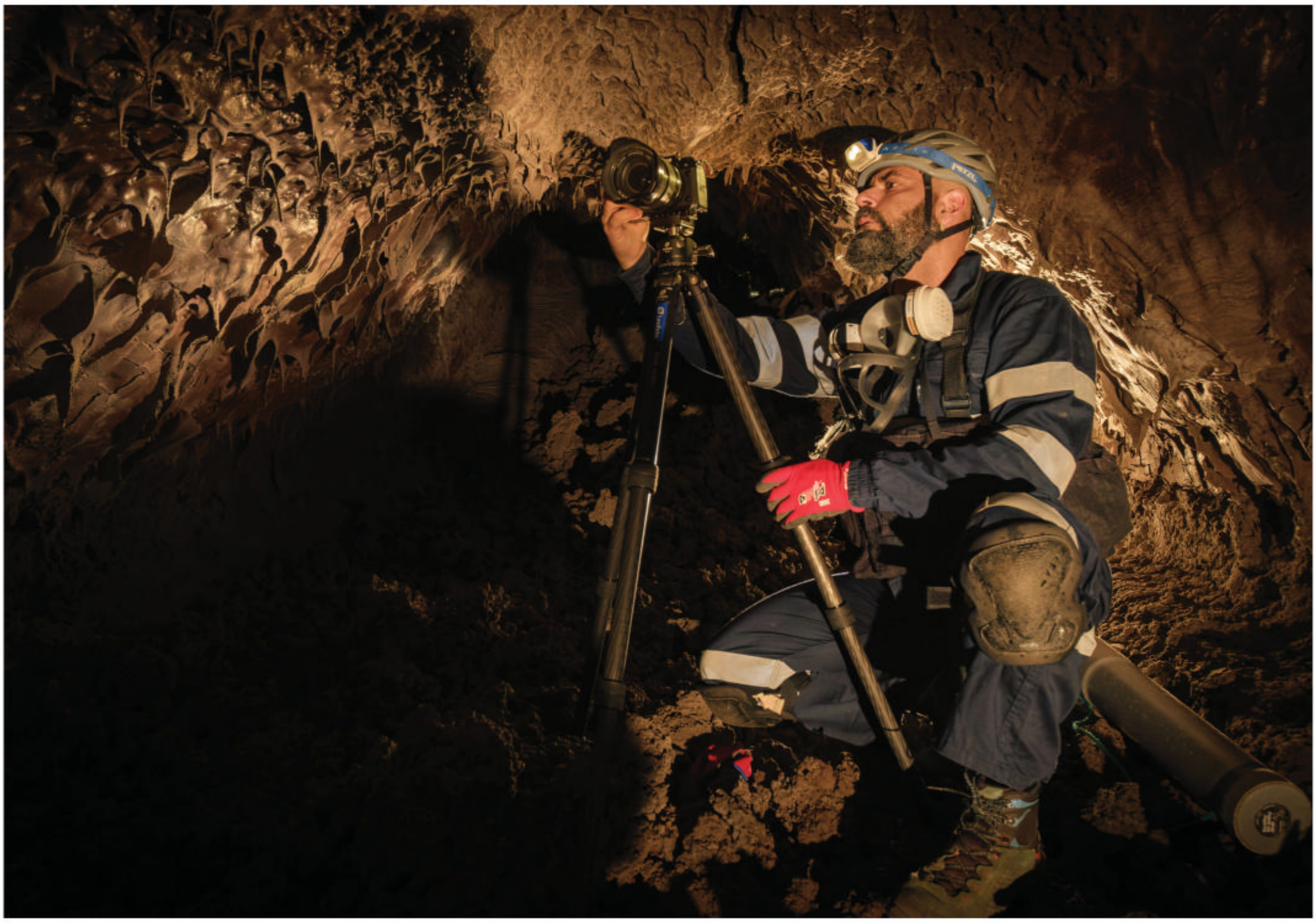
You can see all the winners and finalists in the TIPA camerAmore Photo Contest at **www.tipa.com**



▲ *Under Fire, A Lens That Will Not Break* by Abdelrahman Alkahlout (Palestine), Honourable Mention, 'My Camera In Action' category, TIPA *camerAmore* Photo Contest.

▼ *Taking Pictures At The Mukena Factory* by Arie Basuki (Indonesia), Honourable Mention, 'My Camera In Action' category, TIPA *camerAmore* Photo Contest.

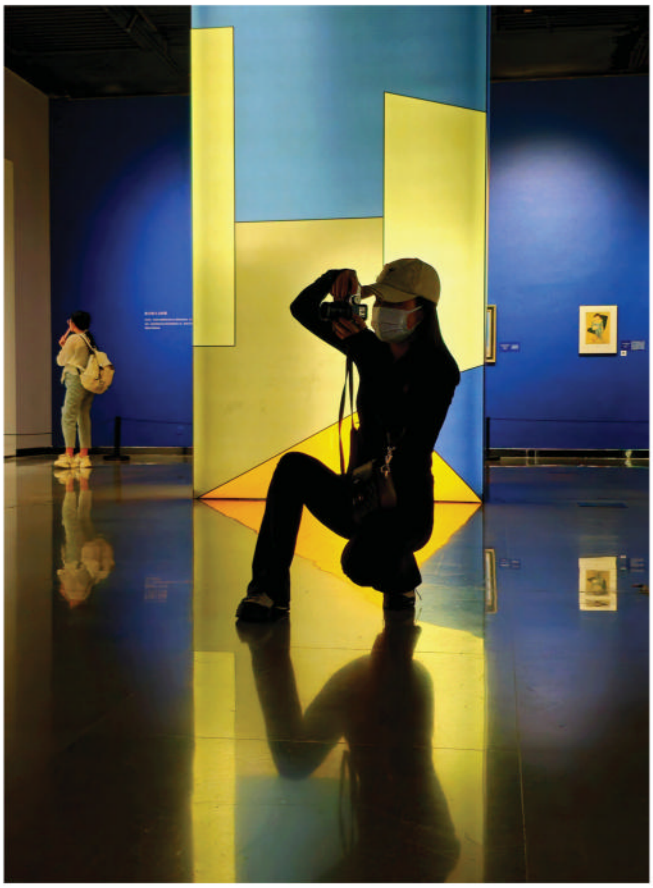


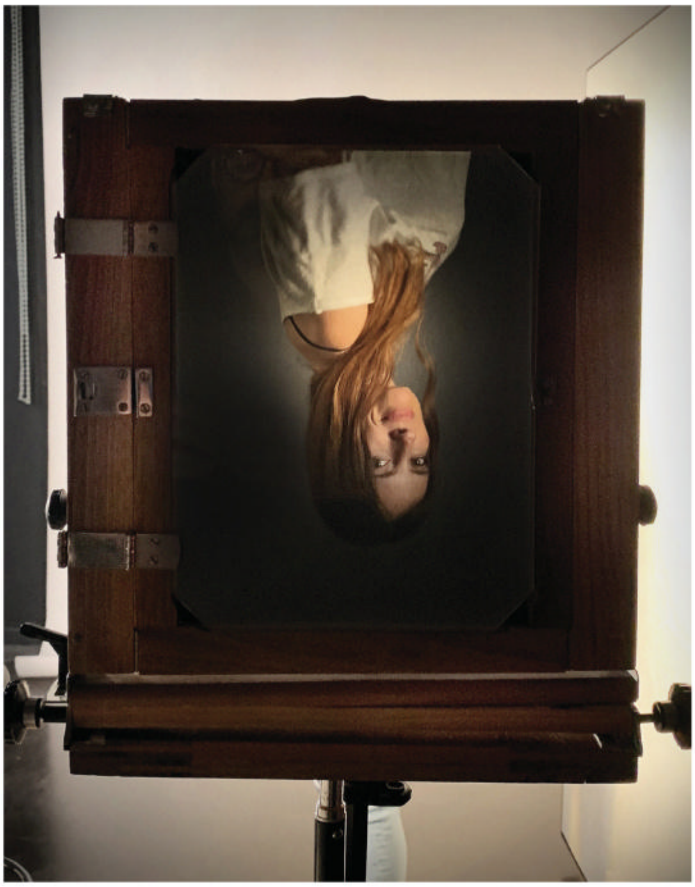


▲ *On Assignment* by Arturo J Rodriguez Perez (Spain), Honourable Mention, 'My Camera In Action' category, TIPA *camerAmore* Photo Contest.

▼ *Beautiful Posture* by Chunshui Yu (China), Honourable Mention, 'My Camera In Action' category, TIPA *camerAmore* Photo Contest.

▼ *Portrait* by Javier Arcenillas (Spain), Honourable Mention, 'My Camera In Action' category, TIPA *camerAmore* Photo Contest.





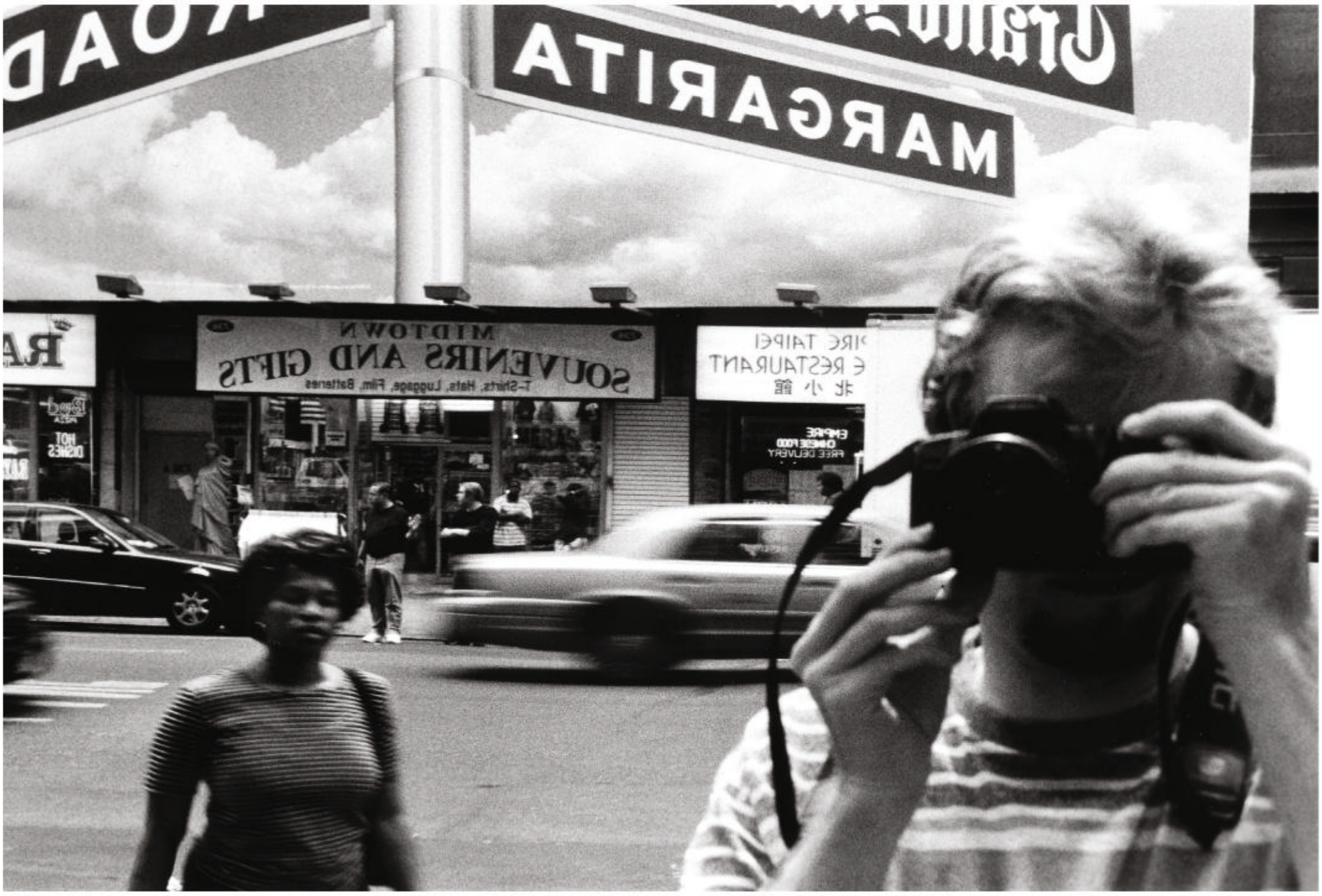
▲ *Clownfish's Sanctuary* by Khaichuin Sim (Malaysia), Honourable Mention, 'My Camera In Action' category, TIPA *camerAmore* Photo Contest.

▼ Chasing A Sunset Over A Sea Of Clouds by Shi Yanke (China), Honourable Mention, 'My Camera In Action' category, TIPA *camerAmore* Photo Contest.

▲ *Portrait 1* by Diana Muminova (Kazakhstan), Honourable Mention, 'My Camera And I' category, TIPA *camerAmore* Photo Contest.

▲ *Inbound* by Victor Udofia (Nigeria), Honourable Mention, 'My Camera In Action' category, TIPA *camerAmore* Photo Contest.

◀ Screen On Me by Nada Fahmila (Indonesia), Honourable Mention, 'My Camera And I' category, TIPA *camerAmore* Photo Contest.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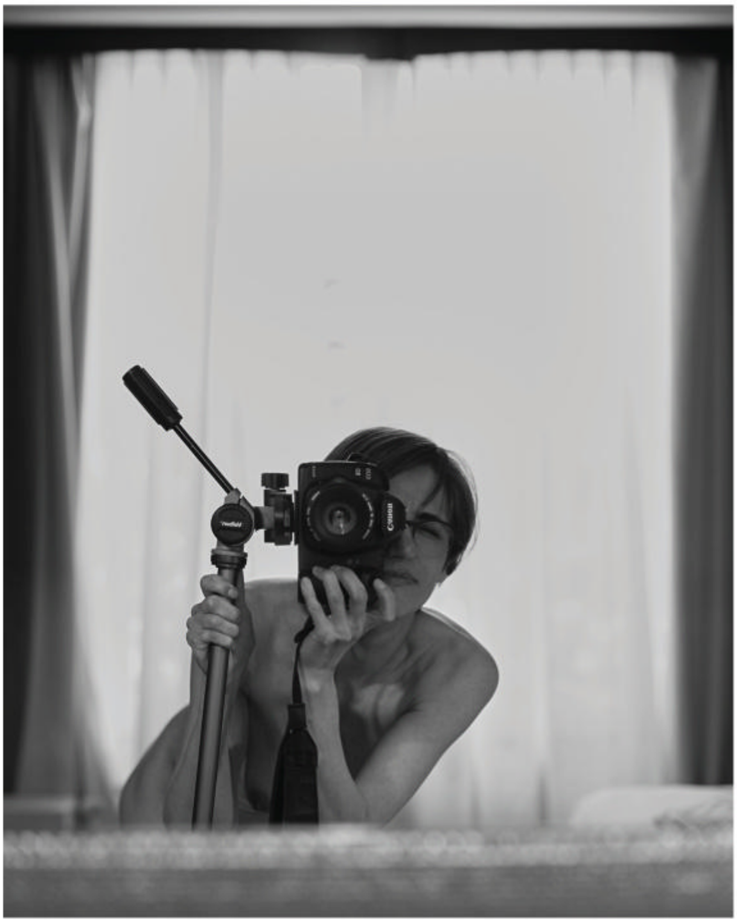
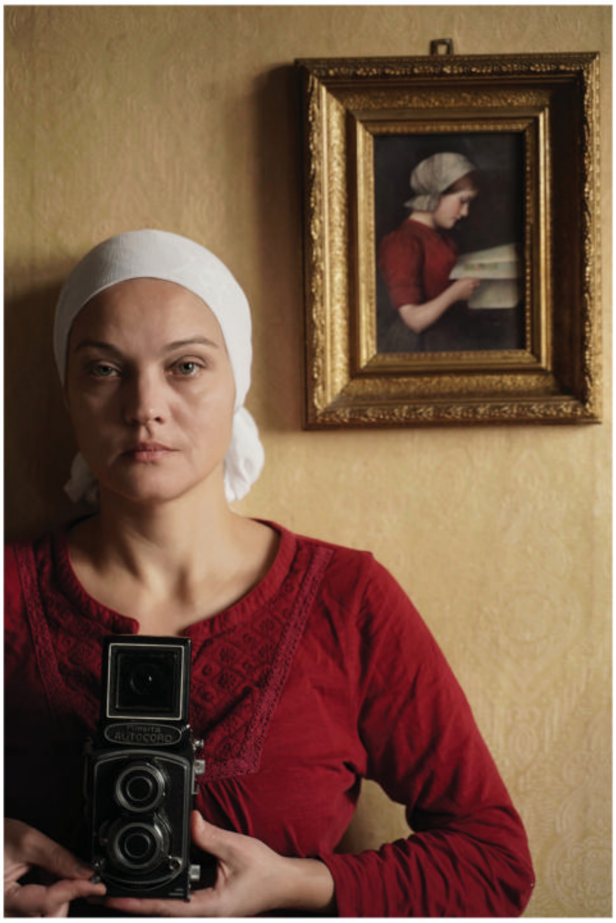
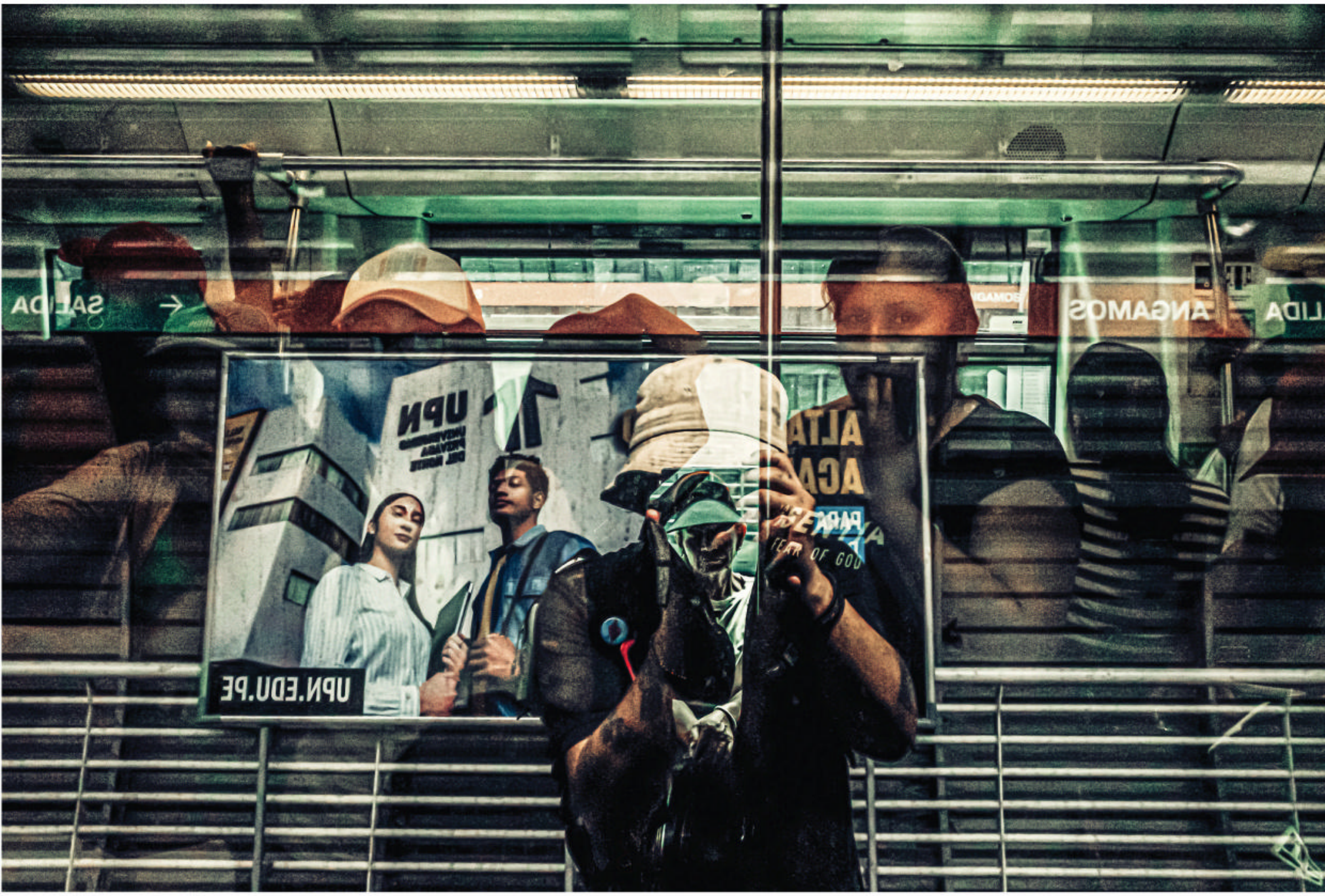
▲ *USA* by Didier Sylvestre (France), Honourable Mention, 'My Camera And I' category, TIPA *camerAmore* Photo Contest.

▼ *The First Steps In Photography* by Ekaterina Mikryukova (Russian Federation), Honourable Mention, 'My Camera And I' category, TIPA *camerAmore* Photo Contest.

▼ *Girl With A Camera* by Julia Trubnikova (Russian Federation), Honourable Mention, 'My Camera And I' category, TIPA *camerAmore* Photo Contest.



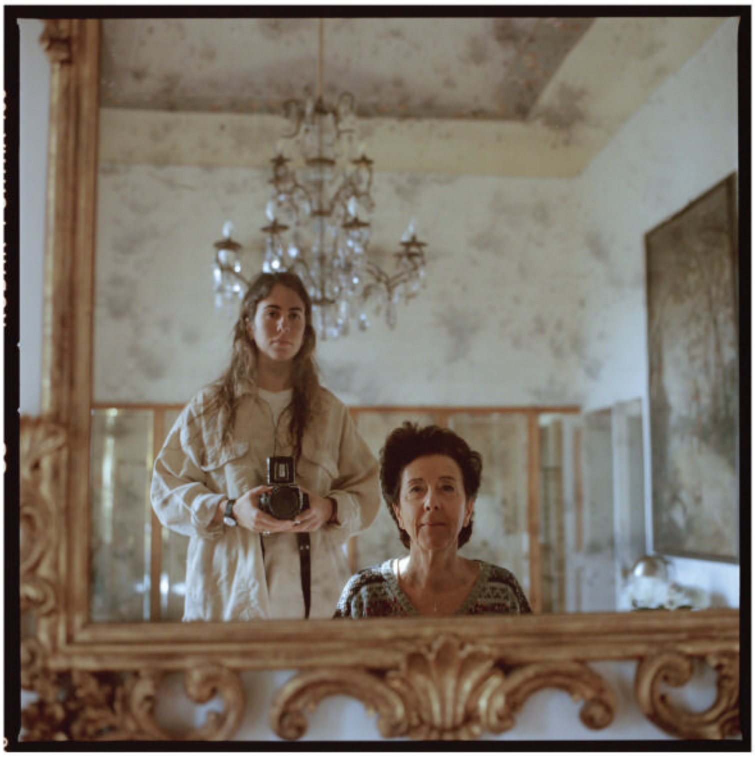


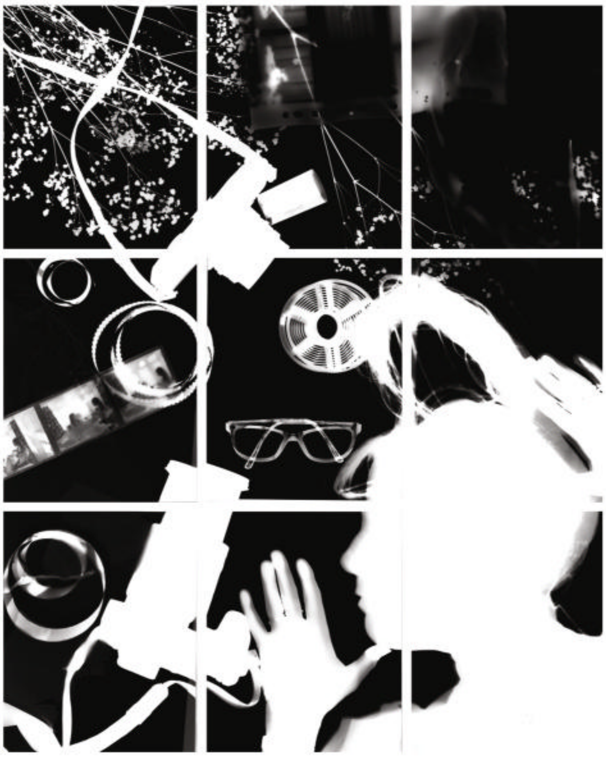


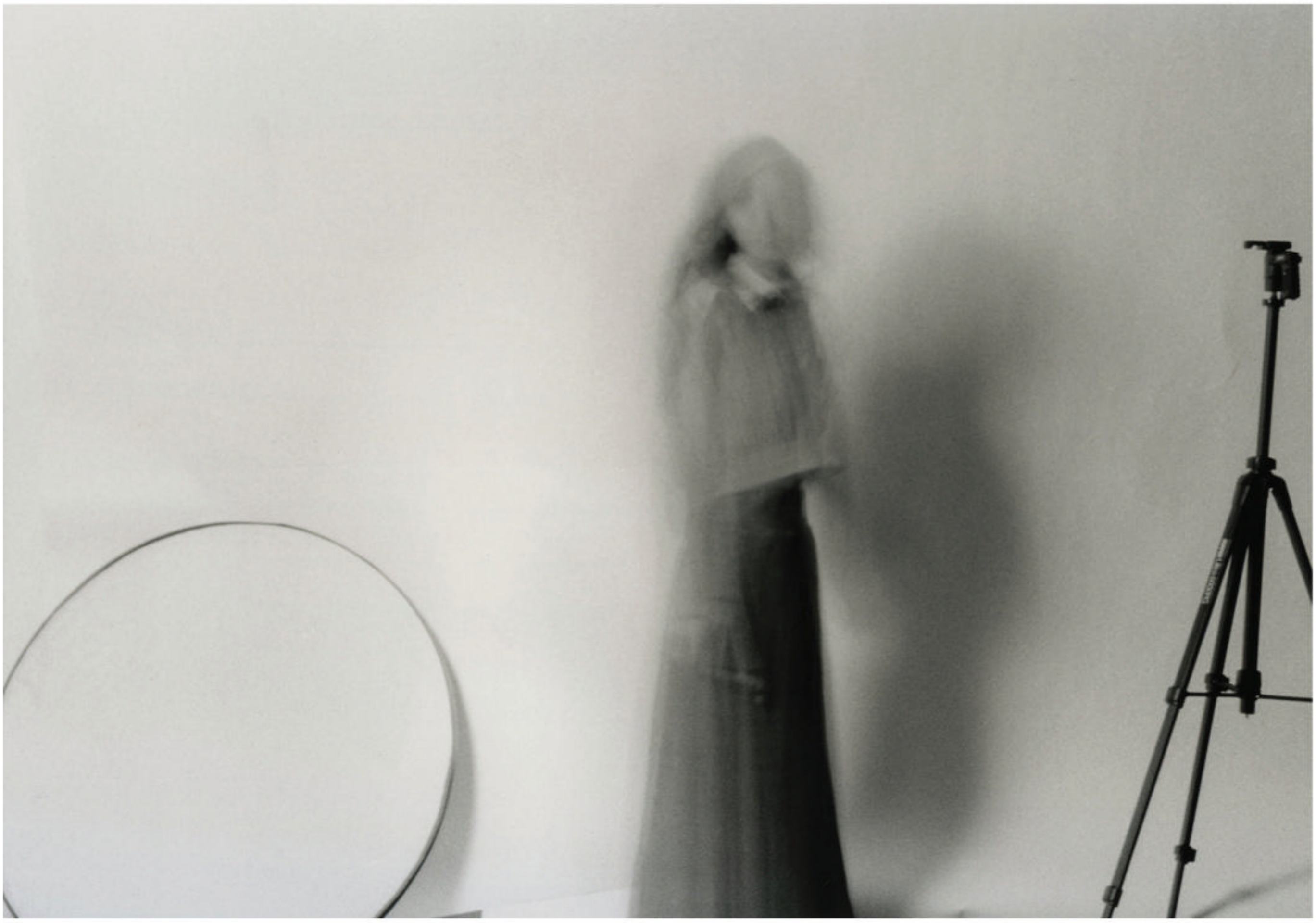
▼ *Mariella y yo* by Flor Crosta (Uruguay), Honourable Mention, ‘My Camera And I’ category, TIPA *camerAmore* Photo Contest.

▲ *Train Self-Reflection* by Jeanfranco Tenorio (Perú), Honourable Mention, ‘My Camera And I’ category, TIPA *camerAmore* Photo Contest.

▼ *Back To Basics* by Clair Robins (United Kingdom), Honourable Mention, ‘My Camera And I’ category, TIPA *camerAmore* Photo Contest.



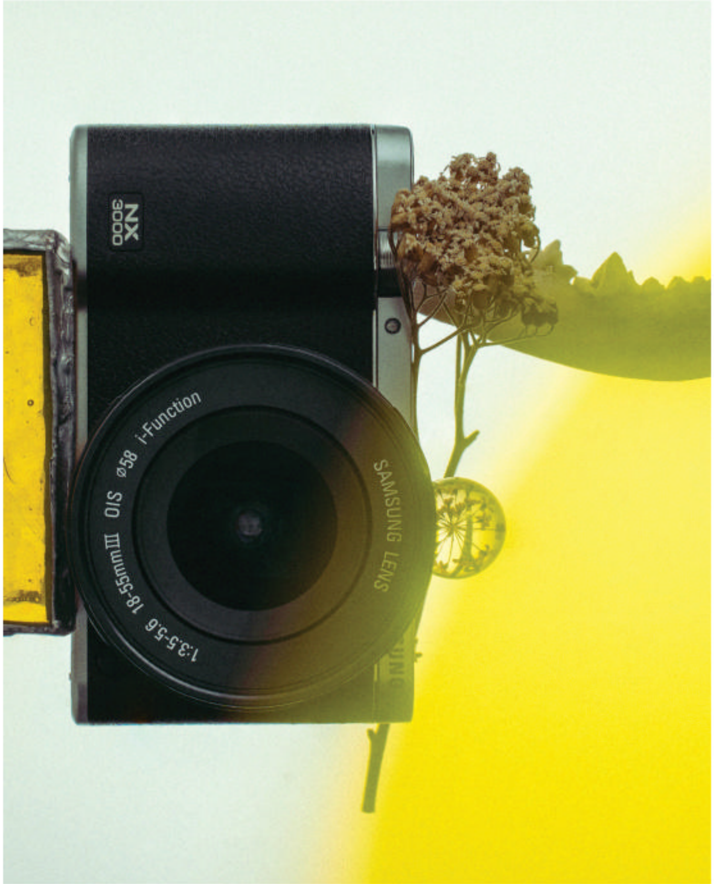




▲ *Here I Stood For A Long Time And Did Not Move* by Yitty Lefkowitz (USA), Honourable Mention, 'My Camera And I' category, TIPA *camerAmore* Photo Contest.

▼ *Yellow* by Diana Muminova (Kazakhstan), Honourable Mention, 'What's In My Camera Bag' category, TIPA *camerAmore* Photo Contest.

▼ *Fill The Frame 50x70 cm* by Mia Galde (Sweden), Honourable Mention, 'What's In My Camera Bag' category, TIPA *camerAmore* Photo Contest.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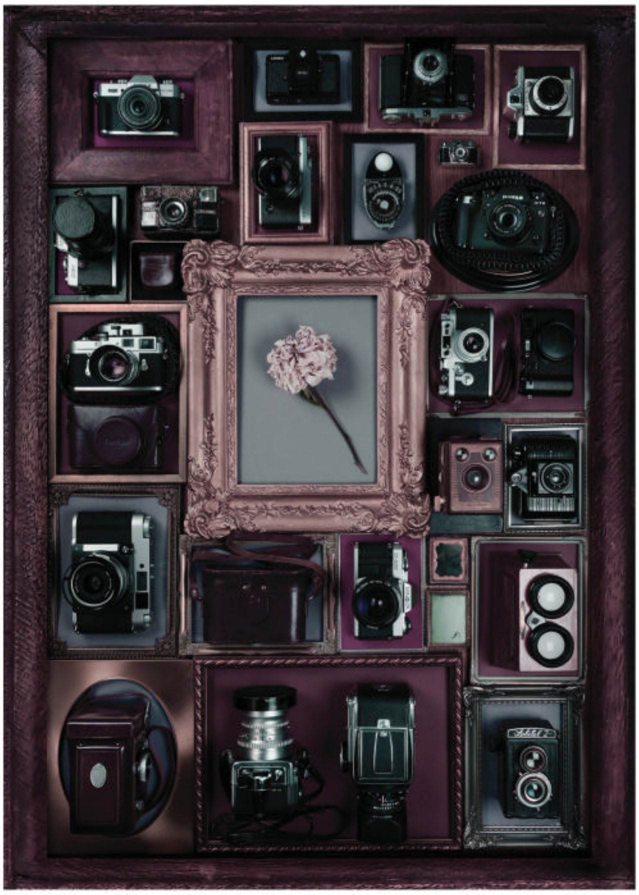

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▲ *When The Camera Is In Repair, Nature Moves In* by Tinna Björk Indigodóttir (Iceland), Honourable Mention, 'What's In My Camera Bag' category, TIPA *camerAmore* Photo Contest.

▼ *My Analog Gear* by Eva Johanna Rosbäck (Sweden), Honourable Mention, 'What's In My Camera Bag' category, TIPA *camerAmore* Photo Contest.

▲ *A Bit Of Everything* by Giulio Tanzini (Italy), Honourable Mention, 'What's In My Camera Bag' category, TIPA *camerAmore* Photo Contest.

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▲ *Emotional Memory* by Jianjun Li (China), Honourable Mention, 'What's In My Camera Bag' category, TIPA *camerAmore* Photo Contest.

▼ *My Fotoryukzak And My Photo Studio* by Vladimir Kurakov (Russian Federation), Honourable Mention, 'What's In My Camera Bag' category, TIPA *camerAmore* Photo Contest.

▼ *Portable Portraitable* by Maurizio Milesi (Italy), Honourable Mention, 'What's In My Camera Bag' category, TIPA *camerAmore* Photo Contest.

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REPORT BY **PAUL BURROWS**

SIGMA BF

GO YOUR OWN WAY

Sigma has torn up the rule book with its latest mirrorless camera which is also its first full frame model. It not only looks different, but it's very different in its design concept which is about stripping back to the bare essentials… and far further than Leica has ever dared to go with its *Das Wesentliche* philosophy.

If you were thinking that Sigma's next move in mirrorless cameras would be a full frame version of the fp, then think again. If you were thinking that Sigma's next mirrorless camera might finally showcase a full frame Foveon sensor, then you'd be wrong again.

In fact, it's almost certain that absolutely nobody outside Sigma saw the BF coming. It's like nothing we've ever seen before and it demands you completely reset the way you think about a contemporary mirrorless camera. Accepted conventions have to be tossed out of the window, similarly long-held traditions and, indeed, the very essence of what you think you might need or want. Presumably, just like Sigma when the idea of the BF was originally floated, you need to start with an open mind and a slate scrubbed completely clean… so take a deep breath and prepare to be well and truly challenged.

In a nutshell, the BF is a full frame mirrorless camera which uses the L mount and has a 24.6 megapixels BSI-type CMOS sensor, but that's where any conventionality ends. Sigma says it's "…an uncompromising vision for the digital camera" that's "…stripped to the essence". If this reminds you of Leica's *Das Wesentliche* design philosophy – which roughly translates as 'the essentials' – you'd be right, but while it's primarily heritage that dictates the German camera maker's approach, Sigma has its eyes very firmly set on the future, casting off what it sees as the shackles of history.

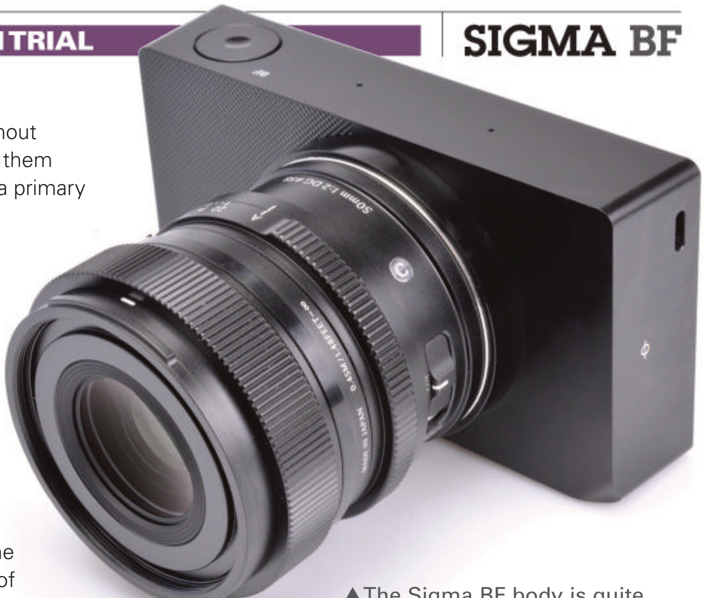
Nevertheless, there's more than a hint of Leica's T series in the BF – which, of course, isn't around anymore, but let's not go there – in that both have bodyshells milled from solid lumps of aluminium and both employ quite different methodologies in terms of their operation… both essentially touchscreen-based. However, Sigma has taken the latter a whole lot further in its quest for greater simplification which has – as it inevitably must – also involved a red pen through a lot of features that many might consider to be… er… essential.

Sigma says it has pursued "radical simplicity" in order to create a "modern day camera obscura" with the objective of making it "…an everyday camera for creative minds". It's an antidote to what Sigma's perceives as the over-complication of current digital cameras in both their feature sets and operation… and which, it contends, is one reason why so many people simply reach for their smartphone when they want to take a photograph.

DELETE, DELETE, DELETE

The reality, though, is that the Sigma BF is never going to take on the smartphone for "everyday life" photography – for starters, it's too bulky once a lens is attached (except for Panasonic's Lumix S 26mm f/8.0 'pancake' prime) and it's too expensive – but what it is going to do to challenge the generally accepted ideas about what is really necessary in a digital camera's design for it to still be both workable and, perhaps even more importantly, appealing as a camera.

It would have been truly fascinating to be a fly on the wall at the product planning meetings for the BF as the inclusions and omissions – especially the latter – were debated. There certainly appears to have



▲The Sigma BF body is quite compact for a full frame mirrorless camera, but even Sigma's smallest lenses – the I series primes – add quite a bit of bulk. Panasonic's Lumix S 26mm f/8.0 'pancake' prime – which is an L mount lens, of course – could be a consideration. The Sigma I 50mm f/2.0 Contemporary is shown here.

been a collective will to strongly hold the line on "radical simplicity" no matter what. Consequently, you can cross off an EVF, a built-in flash *and* a hotshoe, a memory card slot, any wireless communications, a physical shutter and in-body image stabilisation. The monitor screen is fixed and there's just one interface – a USB Type C port – along with just a handful of external controls.

Balancing all this out is that the camera has 230 GB of internal storage – a path that Leica is also going down – and many photographers don't use flash… especially with the high ISO performance of a 24 megapixels full frame sensor being so good due to the bigger size of the pixels. Some don't do wireless data transfers either, and the fast USB C port is versatile, although there perhaps should have been two of them. Incidentally, the sensor has dual gain output circuitry – with the two base ISO settings for stills being 100 and 400 for stills; and 320 and 1250 for video – so the high-ISO performance is further enhanced.

The BF certainly isn't the only current mirrorless camera without an EVF, but the rest of them have video-making as a primary application while the Sigma is, to quote its maker, "…chiefly a still camera" which makes this omission a bit harder to explain away. The absence of a focal plane shutter isn't so unusual any more, but the BF's sensor doesn't have the faster read-out speed of a stacked imager so rolling distortion when shooting fast-moving subjects is inevitable.

> OF COURSE, ALTHOUGH ACCESSING ITS FUNCTIONALITY IS LESS THAN CONVENTIONAL, AT SOME POINT THE BF HAS TO RETURN TO A DEGREE OF CONVENTIONALITY WITH WHAT IT CAN ACTUALLY DO."

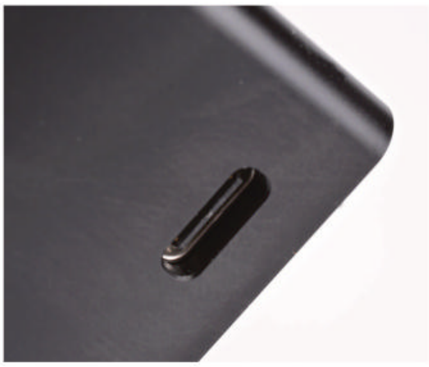
Another design objective is to eliminate "…everything that distracts from your interaction with the image" which is just never the case when using a monitor screen, but is exactly what framing with an eyelevel viewfinder achieves. You'd think there would have been a good case for following the Leica M11-D and instead having a viewfinder (albeit electronic in the Sigma's case), but no monitor screen, transferring some controllability along with image review/replay to a mobile app. Alternatively, at least make the monitor screen tilt adjustable to help manage the reflections that will inevitably be an issue when shooting in bright sunlight (although there is a higher-contrast 'Outdoor' setting).

GET SET

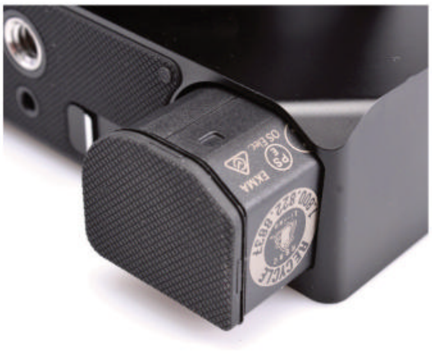
Of course, although accessing its functionality is less than conventional, at some point the BF has to return to a degree of conventionality with what it can actually do, but here too, there are parallels with Leica's more pared-down approach… at least as it was originally with the first digital M rangefinder models.

For example, JPEG capture is at one image size and one compression level, although there is a choice of seven aspect ratios with six of them crops on the standard 3:2 shape of the sensor's imaging area. The maximum image size is 6016x4012 pixels and there's also a 1.5x crop (i.e. 'APS-C' format) which gives an image size of 3840x2560 pixels. RAW files are captured in the same sizes and in the Adobe DNG format with 14-bit RGB colour. There's the option of RAW+JPEG with obviously just the two pairings in either full frame or 'APS-C'. Continuous shooting is at up to 8.0 fps with full AF/AE adjustment and for burst lengths of up to 1000 JPEGs or 350 RAWs which is generous.

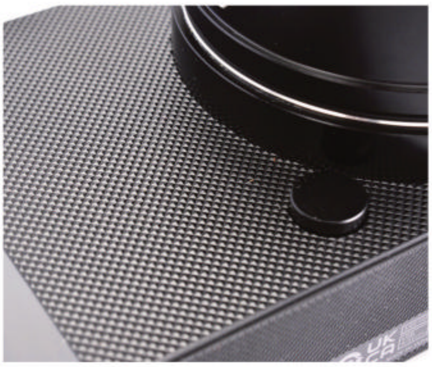
There is a handful of in-camera processing modes for JPEGs, starting with a set of 13 colour profiles, some of which we've seen before on the fp series cameras. They're also more cinematic than photographic, but as we're seeing with the growing popularity of cinema-derived LUTs,



▲ Sole interface is a 10 Gbps-speed USB Type C port.



▲ Battery incorporates its own compartment cover similar to Leica's arrangement on the Q and SL series models.



▲ Textured panel on the front of the camera provides a grippy handhold.

> **THERE'S A GRIPPY SOLIDNESS THAT'S ACTUALLY QUITE ADDICTIVE, AND THE ONE-PIECE BODY IS DEFINITELY REASSURING IN ITS TACTILE SOLIDITY."**

◀ All Sigma's I series prime lenses are now available in a silver finish to match the silver BF body.

they can look great with stills. Settings such as Warm Gold, Sunset Red and Teal & Orange have already proved to be popular with the fp cameras, and are quite atmospheric in their looks. There are four adjustments for each of the colour modes – called Look Effect, Highlight, Shadow, Fade and Vignette – while the Monochrome parameters are for contrast and toning; namely, Red, Green, Blue/Green, Blue, Blue/Purple, Cold Tone, Warm Tone or Sepia. There are manually-enabled in-camera corrections for distortion and vignetting, otherwise everything else happens in the background.

The autofocusing uses hybrid contrast/phase detection and while the number of measuring points isn't stated, the touchscreen's display of active points suggests it's a lot more than the fp's 49. There's either single-point or area modes with subject recognition and tracking for humans and animals, both with eye detection while the former will also automatically switch to face detection if needed to keep the subject in focus. A third recognition mode looks for both humans and animals. Sensitivity extends down to -5.0 EV at f/1.4 and ISO 100.

The manual focus assists comprise a distance scale, a distance read-out, image magnification (full screen or PIP with three settings up to 8x) and a focus peaking display (in white, black, red, yellow, cyan, blue or magenta, but with no adjustment for intensity). Additionally, the manual focus ring on supported lenses can be switched between linear and non-linear operation.

Exposure control is based on multi-zone metering with the option of a spot measurement and which drive the standard complement of 'PASM' modes. The sensor-based shutter has a speed range of 30-1/25,600 second plus B (which can run for up to 300 seconds). The sensor's read-out speed is 24.8 milliseconds – corresponding to about 1/40 second – which is presumably why there's no possibilities of using flash because the maximum sync speed would be very low.

The auto overrides comprise exposure compensation of up to +/-5.0 EV, an AE lock and auto exposure bracketing; the latter over three or five frames with up to +/-3.0 EV of adjustment in one-third stop increments. You can also choose to fire off the sequence manually frame-by-frame or continuously. There's also a focus bracketing function which can be set from three to 15 frames with up to plus/minus ten steps adjustment.

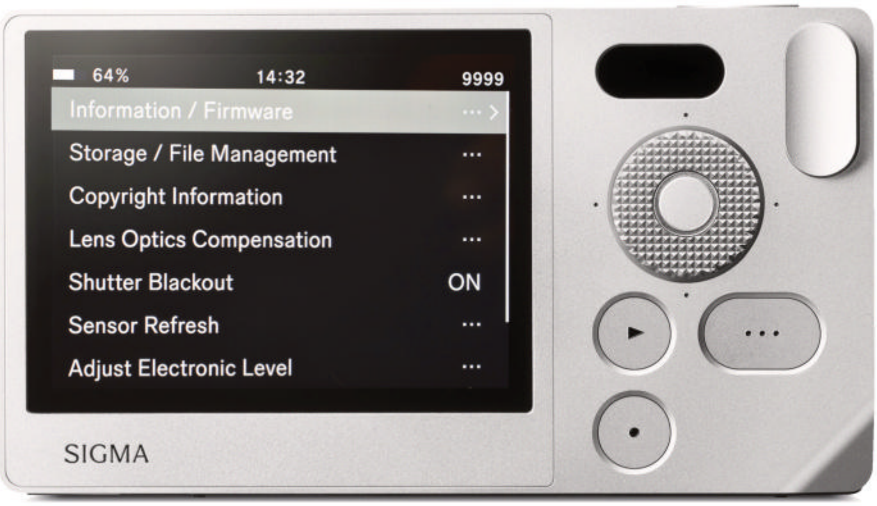
The white balance controls comprise two auto modes (full auto correction or an alternative called 'Lighting Source Priority' which is ambience based), six presets and a total of ten custom settings. Manual colour temperature setting is possible over a range of 2500 to 10,000 degrees Kelvin and there's auto white balance lock.

IN THE HAND

At first glance, the angular BF body doesn't look especially user friendly. It's all corners and edges with only a small thumbrest for comfort along with a textured panel on the front to afford a better grip. In the hand, however, the BF feels a lot better than you'd initially expect and here, once again, there are similarities with Leica, although the digital Ms and the Q series cameras are much smoother in their shaping so look more approachable. Resist the doubts because the BF proves to be equally at home in your hands. Yep, it's a surprise, but a nice one… and here you start to get what this camera is all about. There's a grippy solidness that's actually quite addictive. That one-piece body feels pretty nice in the hand and is definitely reassuring in its tactile solidity.

It takes seven hours for a pair of five-axis state-of-the-art CNC milling machines to turn a solid lump of aluminium into a BF body, and Sigma currently has six of them on the job 24/7. After that, it's largely hand assembly so the BF is never going to be a mass-produced camera, and it's also worth noting that it's being built in Japan. Sigma is very proud of its state-of-the-art factory in Aizu which is about 300 kilometres north of Tokyo and, these days, the label 'Made In Japan' on a camera body has pretty much the same kudos as 'Made In Germany' on a Leica. While you may not be able to see the displays very clearly at times, the BF's keep-it-simple user interface has been pretty well thought out, with ten key settings arranged along the upper and lower edges of the monitor screen, five per row. Once you're set-up, you can switch off any settings displays entirely to have just the live view image with no clutter.

Navigation and adjustment are via a single control wheel/keypad on the camera's back which is accompanied by just three buttons… one of them being for switching



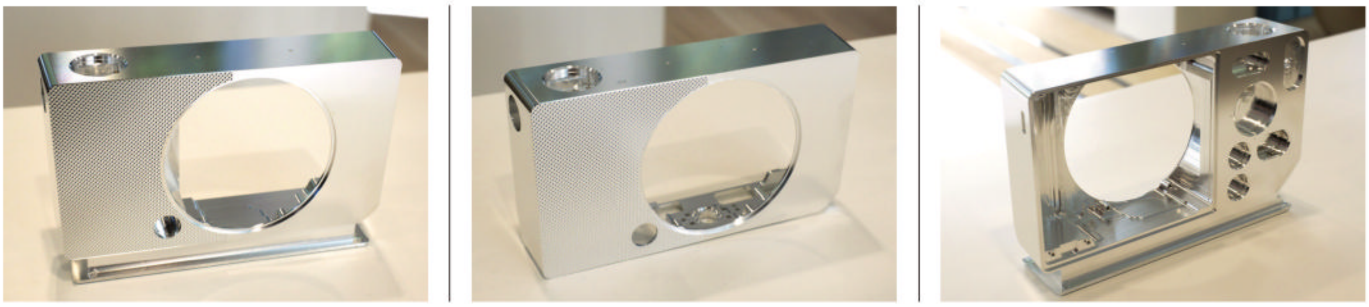
◀ Rear panel layout is simplicity itself with just about everything done via the control wheel/keypad… monitor screen is fixed. Buttons have haptic feedback. Small read-out panel above the command wheel shows whatever setting is being adjusted.

The System menu is for the set and forget stuff.

the BF on or off. There are some touch screen controls, including for positioning the focus point, but curiously not for these basics and which, subsequently, really precludes making fast setting changes… you always have to toggle up/down and left/right using the keypad to get where you want to go. Another idiosyncrasy is that the setting ranges aren't cyclical so you can go up or down, but not wrap-around. A small read-out screen on the camera back shows the selected function and the subsequent settings adjustments. In the field, it proves to be very useful as it's a lot easier to see what you're doing.

The only other physical controls are the shutter button on the top panel and the lens release button alongside the mount. Beyond all the key capture-related settings, there is a more conventional 'System' menu for the set-and-forget stuff (such as the date and time, language and copyright information) which again needs to be navigated manually. For exposure control, there's a virtual version of using physical 'A' settings to determine the mode such as on Fujifilm's X-T series cameras. So, set the shutter speeds to 'AUTO' and you have aperture-priority auto exposure control. Set the apertures to 'AUTO' and you have shutter-priority auto exposure control. Set both to 'AUTO' and you have programmed exposure… and you now know what you need to do for fully manual exposure control. Switching between auto and manual ISO control is done the same way. The compact Sigma I series prime lenses are being touted as ideal companions for the BF – indeed, all have been re-issued in silver to match the silver-bodied version – and have aperture collars with a physical 'A' auto control settings so this is one operation that can be taken away

▲ The BF body starts out as solid block of aluminium; shown here front and rear.



▲ The milling process takes seven hours in all, using a state-of-the-art five-axis CNC machine. The rear view of the finished body shows just how much material is removed in the process.

MAKING MOVIES

For all the reasons outlined in the main text, the Sigma BF isn't going to be anybody's first choice as a video camera because it lacks a bunch of features that are on the 'must have' list. For some of them, there are work-arounds, but why do this when there are plenty of full frame mirrorless cameras with video-making capabilities as a priority? Sigma itself says that the BF is primarily targeted at photographers, but that said, it's still well enough equipped for you to make good-looking video clips

The headline act is 6K res (6016x3384 pixels) at 24, 25 or 30 fps with 10-bit 4:2:2 colour using the HEVC/H.265 codec and LongGOP compression, or with 8-bit 4:2:0 colour with the AVC/H.264 codec. Both the codec options are also available for 4K UHD and Full HD with the frame rates up to 25/30 fps and 100/120 fps respectively. The 4K video is derived from 6K to enhance its image quality, and recording in Leica's flat L-Log profile is available for easier contrast and colour grading in post-production. The sensor's 'dual gain' circuitry sets the two base ISO levels at 320 and 1250 for video which helps extend the dynamic range at the higher sensitivity settings and improve the camera's low-light shooting capabilities.

There's theoretically no limit on the clip length, but the battery will call time before anything else. Interestingly, the BF has both zebra patterns (adjustable for threshold) and a false colour display for gauging video exposures, the latter being something you'd only find on a high-end hybrid camera such as Panasonic's Lumix S1R II. The focus peaking display is available to assist with manual focus, but continuous AF is fast enough in most situations. Electronic image stabilisation (EIS) is available for video (although not at the 6K res), but because it moves the image around on the sensor there's a 1.25x crop.

The camera has built-in stereo microphones, but no standard audio input although the USB C port will support both a microphone and headphones (but obviously not both at the same time). There's the option of manual or automatic levels control and a wind-cut filter. The BF can also serve as Webcam with UVC/UAC streaming via the USB C port.

The absence of even a cold shoe mount limits what accessories can be fitted to the BF for video work, but a cage will provide a solution (there is a tripod mount), but with no HDMI port available you have to use the camera's monitor for viewfinding and it's fixed which can be restrictive. There's no doubt that you can make the Sigma BF work for video – and the results are excellent in terms of the image quality – but it's harder work than it really needs to be so hand-held 'run-and-gun' clips are where it can be quite effective, and the L mount means there's a big choice of lenses, especially from Sigma itself and Panasonic's Lumix S system.

As with photography, if you like the BF's concept and think it could well be the camera you've been looking for, then you'll likely be quite happy with its video capabilities as well.

from the camera body. However… another quirk… for auto aperture control, both the lens and the camera body need to be set to 'A' and 'AUTO' respectively. A real-time histogram appears in the lower menu band whenever you're adjusting apertures and or shutter speeds, but it isn't continuously displayed otherwise which means you'll have to learn to read the zebra pattern or false colour displays – both video exposure control aids that are particularly useful for guarding against overexposure.

In practice, the BF's control interface proves to be pretty functional, but it takes a while to get used to its various foibles and the fact that changing anything isn't as quick as using a touch screen or even a classic old dial. The more you use it though, the more comfortable and efficient it becomes, but the BF seems to work best when you don't need make too many adjustments on-the-fly… so, for example, a set-up using semi-auto exposure control with auto ISO adjustment, the Area AF mode and the Colour Mode of choice so, most likely, then only exposure compensation will be needed as an override.

> IN PRACTICE, THE BF'S CONTROL INTERFACE PROVES TO BE PRETTY FUNCTIONAL, BUT IT TAKES A WHILE TO GET USED TO ITS VARIOUS FOIBLES."

A
22 16 11 8 5.6
45mm 1:2.8 DG ⌀55
SIGMA
BF

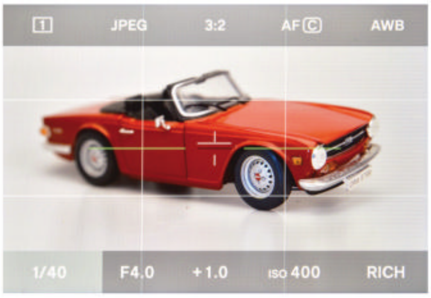
▲Top panel is devoid of any controls except for the shutter release.

We used the BF with both the Sigma I series 35mm f/2.0 and 50mm f/2.0 Contemporary primes, and found that adjusting the focus and apertures manually with this lens proved to be closer to the more contemplative experience that seems to be the philosophical *raison d'etre* of the BF.

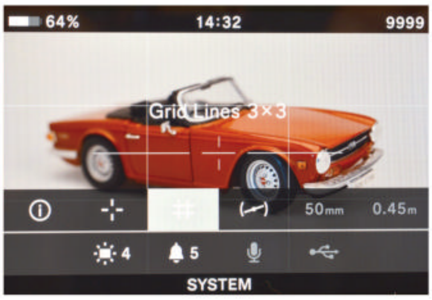
In truth, and despite pretty decent set of specs, it's arguably not a working camera… it's a get-out-and-just-enjoy-taking-photographs-for-the-sheer-fun-of-it camera. And, with no other considerations or imperatives to intrude, it works supremely well in this role because it looks fabulous, feels lovely to hold (and more secure than you might imagine) and, when you've mastered how to drive it effectively, delivers fantastic results. However, the fact remains that, if it had a viewfinder of any sort – or even the facility to fit one – it would play havoc with sales of Leica Ms and Qs, and it would undoubtedly increase its appeal as a more serious camera.

As already noted, there's just the one interface – a 10 Gbps-speed USB Type C ports – which could end up having a lot of demands on it, not just in terms of data transfer, but also fitting accessories of which there will probably be more down the track (currently there's a wired remote trigger). There's no wireless connectivity so you can't do anything this way either and, given that the data storage is exclusively an internal memory, you can't help feeling that this would have added some useful flexibility in terms of managing your pictures.

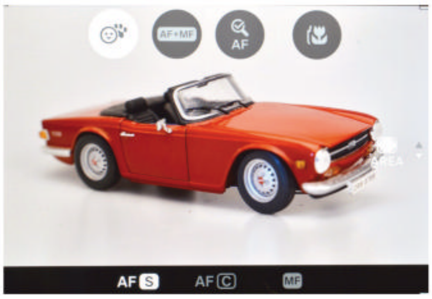
The new BP-81 battery adopts the Leica arrangement – as on the Q and SL models – of incorporating the compartment cover



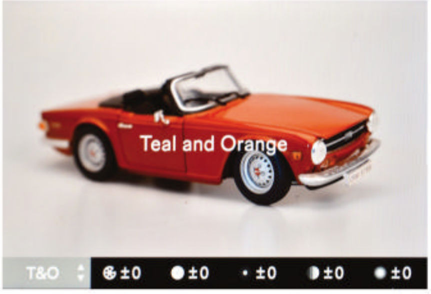
▲Ten key functions are easily accessed via the BF's main user display. Navigation is via the command wheel.



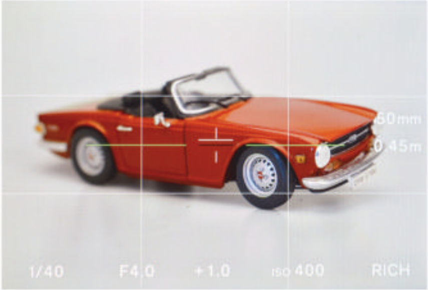
▲ Secondary menu provides access to additional settings such as guide grids.



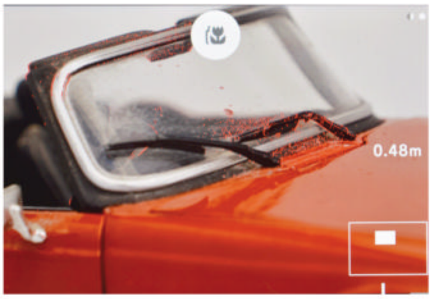
▲ Sub menus appear after you select one of the main functions to make a change to the setting.



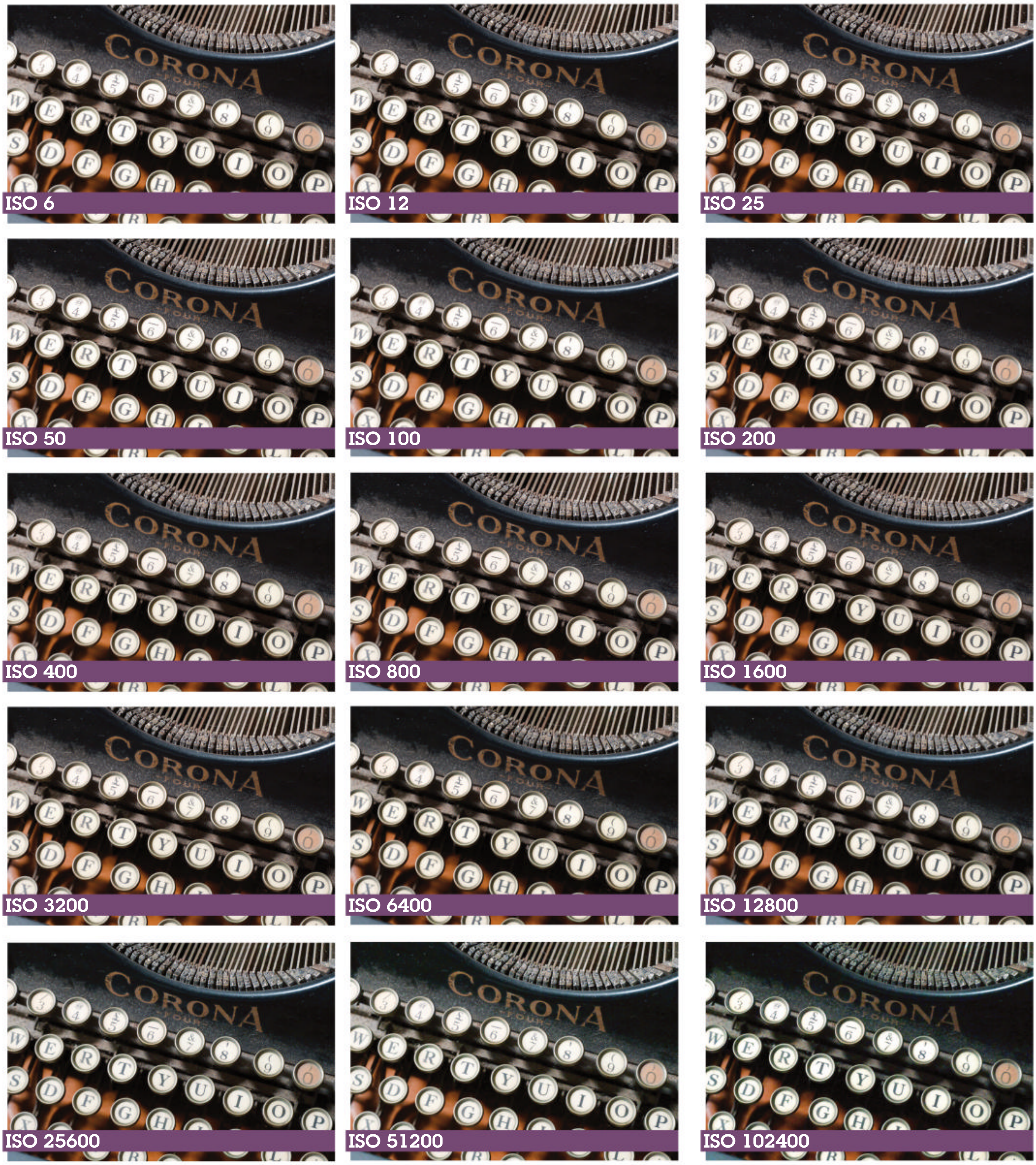
▲ The selection of 13 Colour Modes includes a number we've already seen on the fp series bodies including the cinematic 'Teal & Orange'.



▲ Additional on-screen read-outs are available for the lens focal length and focusing distance. Alternatively, you can switch everything off if you want a clear view.



▲ Manual focus assists comprise a magnified image (up to 8x) and a focus peaking display with a choice of seven colours (red is shown here).



ISO 6
ISO 12
ISO 25
ISO 50
ISO 100
ISO 200
ISO 400
ISO 800
ISO 1600
ISO 3200
ISO 6400
ISO 12800
ISO 25600
ISO 51200
ISO 102400

▲The BF's sensor has a native sensitivity range spanning ISO 100-102,400 (extendable down to ISO 50, 25, 12 and 6). The sensor's pixel-level 'dual gain' circuitry gives two base ISO settings – at 100 and 400 for stills – with the result that noise is markedly reduced at the higher sensitivity settings above ISO 400. Consequently, the full native ISO range is useable, and the image quality remains good even at the highest sensitivity settings. These test images are JPEG files taken in the aperture-priority auto exposure mode with the aperture set to f/11 so the exposure time varies to compensate for the adjustments to ISO. Panasonic Lumix S 24-105mm f/4.0 zoom at 67mm.

with a spring-loaded release. It has to be said that the BF seems to chew up power even when it's doing virtually nothing and the percentage remaining display reduces alarmingly fast when you're actually shooting. Sigma quotes a CIPA rating of 260 shots per charge, but our experience was that the reality was quite a lot less. Just why it's so power-hungry is hard to fathom – as, for example, there's no EVF or a physical shutter – but investing in a spare battery looks like a wise move for now (you might want to also buy the dual-battery accessory recharger at the same time).

SPEED AND PERFORMANCE

With the storage medium, file format and shutter type more or less set in concrete,

◀Test images captured as JPEGs with Sigma I series 35mm f/2.0 and 50mm f/2.0 DG Contemporary prime lenses. Rich colour mode, shutter-priority auto exposure control and ISO settings between ISO 200 and 800. The 24 megapixels full frame sensor delivers a nice balance of resolution with a higher signal-to-noise ratio thanks to bigger pixels. IQ benefits include a wide dynamic range and nicely smooth tonal gradations. Colour rendition in the Rich colour mode is pleasing to the eye, but the BF's wide selection of other settings allows plenty of scope to experiment with looks and moods.

it's just a case of seeing if the BF lives up to its continuous shooting specs. The burst lengths are, of course, generous and beyond what anybody is likely to require with real-world shooting. Against the clock, our test camera captured 80 JPEGs in 9.856 seconds which gives a shooting speed of 8.11 fps which is right on the money.

The AF performance is snappy and reliable, including the tracking which hangs on well even with smallish subjects that are moving erratically in terms of both their direction and/or speed.

The 24 megapixels sensor nicely balances resolution with dynamic range and enhanced high ISO performance. Its 'dual gain' circuitry gives two base ISO settings – at 100 and 400 for stills – which means two-stops lower noise at the higher sensitivity settings than would otherwise be the case. Consequently, the BF performs well across its full native ISO range with both definition and saturation holding up well even at ISO 102,400.

There's some fun to be had with the Colour Modes for JPEGs which offer something a little bit different beyond the 'staples' of Standard, Rich (i.e. vivid) and B&W, as do the adjustments for each, making it possible to create some very nice-looking effects in-camera.

Despite a decent set of capture specs and subsequently excellent imaging performance, there's no question that the BF is more a camera for pleasure than any other application. In other words, it's all about the fun of photography and simply getting out and shooting whatever attracts your attention. However, in trying to make its camera less intrusive in the process, Sigma has simply (no pun intended) created a different experience rather than dialling out the camera work entirely.

On balance, the BF is actually a whole lot of fun to use, but Sigma's "uncompromised vision" has unfortunately only ended up creating compromises. Regardless of your previous camera experience, it'll take some acclimatisation and will almost certainly trip you up a few times initially. Be patient is the best advice here.

THE VERDICT

The stark reality here is that the brief Sigma set itself with the BF is almost impossible to fulfil. In the days of film cameras, you could simply add or subtract automation to set the levels of complexity and capability, but today it's actually easier to keep loading up the features while taking anything away can be problematic. It's one of the reasons that so-called entry-level models don't really exist anymore, and why, until now, mirrorless cameras have been defined by what they have rather than what's missing. Can Sigma change the way we fundamentally think about camera design, especially when the BF's pricing is in the same category as conventional models loaded to gunwales with features... and unashamedly classical styling in the case of the Nikon Zf and OM System OM-3?

Obviously, these direct comparisons don't really make any meaningful sense because the BF is intended to be something unique combining smartphone simplicity with 'real camera' capabilities. It could be argued that these two objective are mutually exclusive, but it has to be said that Sigma has gone a long way with the BF to proving otherwise. However, ultimately the two can't be fully reconciled and so something has to give somewhere which, in the case of the BF means that it's not effortlessly simple to use, and nor is it as conveniently functional as a more conventional mirrorless camera. It is, as they say, what it is, and that's its own thing which has the potential to be hugely appealing if you're looking for a different experience. In the end though, the BF will unquestionably reward for effort and, if you get what Sigma is trying to do, you'll enjoy it immensely.

VITAL STATISTICS

SIGMA BF $3,995 body only, recommended retail price

Type: Enthusiast-level mirrorless digital camera with L bayonet lens mount.
Focusing: Automatic hybrid phase/contrast detection via the imaging sensor. Manual switching between one-shot and continuous AF modes. Subject recognition and tracking for humans (with face/eye detection), animals (dogs and cats with eye detection) or humans + animals. Area modes are 1-Point AF and Area AF. AF+MF full-time override. Sensitivity range is EV -5.0 - 18 (ISO 100 and f/1.4). AF and manual focus assistance via distance scale, distance read-out, image magnification (full screen or picture-in-picture, 2x, 4x or 8x) and focus peaking displays (White, Black, Red, Yellow, Cyan, Blue or Magenta). Manual focus collar on supported lenses can be switched between linear and non-linear operation
Metering: 256-point multi-zone and spot measurements. Metering range is EV -7.0 to 20 (ISO 100 and f/1.4).
Exposure Modes: Continuously-variable program, shutter-priority auto, aperture-priority auto and metered manual.
Shutter: Sensor-based shutter only, 30-1/25,600 second plus B (up to 300 seconds). Exposure compensation up to +/-5.0 EV in 1/3-stop increments.
Viewfinder: No built-in EVF. Fixed 8.1 cm TFT LCD monitor (2.1 megadots resolution) with touch controls. Adjustable for brightness and hue.
Flash: No built-in flash. No hotshoe.
Additional Features: Milled one-piece aluminium bodyshell with dust and splash sealing, AE lock, auto exposure bracketing (over three or five frames in up to +/- 3.0 EV increments), dual-delay self-timer (two and 10 seconds), audible signals, auto power-off, remote triggering via USB C.

DIGITAL SECTION

Sensor: 24.6 million (effective) pixels BSI-CMOS with 23.9x35.9 mm imaging area and 3:2 aspect ratio. No optical low-pass filter. Sensitivity equivalent to ISO 100-102,400 (extendable to ISO 50, 25, 12 and 6).
Focal Length Magnification: None.
Formats/Resolution: JPEG, RAW output (lossless compression Adobe DNG format) and RAW+JPEG capture. Image size is 6016x4012 pixels (JPEG and RAW) with 'APS-C' (1.5x) crop to give 3840x2560 pixels. Choice of seven aspect ratios – 21:9, 16:9, 3:2, A Size, 4:3, 6x7 and 1:1. 24-bit RGB colour and 42-bit RGB colour for RAW files.
Video Recording: MOV format with 10-bit 4:2:2 colour (HEVC/H.265 codec, LongGOP compression) at 6016x3384 pixels (6.0K); 30, 25 or 24 fps and 16:9 aspect ratio. At 3840x2160 pixels (4K UHD); 30, 25 or 24 fps and 16:9 aspect ratio. At 1920x1080 pixels (2K FHD) at 120, 100, 60, 50, 30, 25 or 24 fps and 16:9 aspect ratio.
MOV format with 8-bit 4:2:0 colour (MPEG 4 AVC/H.264 codec, LongGOP compression) at 6016x3384 pixels (6.0K); 30, 25 or 24 fps and 16:9 aspect ratio. At 3840x2160 pixels (4K UHD); 30, 25 or 24 fps and 16:9 aspect ratio. At 1920x1080 pixels (2K FHD) at 120, 100, 60, 50, 30, 25 or 24 fps and 16:9 aspect ratio. Clip length only limited by battery life (60 minutes). Built-in stereo microphones with manual or automatic levels adjustment and a wind-cut filter. External stereo microphone or headphones connect via USB C.
Video Features: Electronic image stabilisation (4K or 2K, with 1.25x crop), Leica L-log profile, focus peaking display, zebra patterns, false colour display, centre marker, time lapse movie mode, video streaming (UVC/UAC), frame grab stills from 4K or 6K video
Recording Media: Built-in memory with 230 GB storage.
Continuous Shooting: Up to 1000 JPEGs at up to 8.0 fps or up 350 RAW DNG files. Medium speed shooting at 5.0 fps and slow speed at 3.0 fps.
White Balance: TTL measurement. Two auto modes (auto and lighting source priority), six presets and ten custom settings. Manual colour temperature setting from 2500 to 10,000 degrees Kelvin. Auto white balance lock.
Interfaces: USB 3.2 Gen 2 Type C (10 Gbps).
Additional Digital Features: 13 Colour Modes (Standard, Rich, Calm, Powder Blue, Warm Gold, Teal & Orange, FOV Classic Blue, FOV Classic Yellow, Sunset Red, Forest Green, Cinema, 709 Look, Monochrome), adjustable Colour Mode parameters (Look Effect, Highlight, Shadow, Fade, Vignette) adjustable Monochrome parameters (Red, Green, Blue/Green, Blue, Blue/Purple, Cold Tone, Warm Tone, Sepia), sRGB colour space, focus bracketing (up to 15 frames with up to +/-10 steps adjustment), intervalometer (2-99 frames or unlimited), in-camera RAW-to-JPEG processing (12 parameters), copyright information, dual-axis level indicator, guide grids (2x2, 3x3 and 4x4), in-camera lens corrections (Diffraction and Vignetting), electronic image stabilisation (with 1.25x crop), real time histogram display, 'Fill Light' function (up to +/-5.0 EV, only for RAW file development), playback luminance/RGB histogram displays, playback highlight alert, playback zoom (up to 10x).
Power: One 3.6 volt/3300 mAh rechargeable lithium-ion battery pack (Sigma BP-81 type). In-camera recharging via USB C.
Dimensions (WxHxD): 130.1x72.8x36.8 mm body only
Weight: 388 grams body only (without battery).
Price: $3995 body only. Available in black or silver.
Distributor: C.R. Kennedy & Company, telephone (03) 9823 1555 or visit https://sigmaphoto.com.au

BEFORE BF – SIGMA'S ADVENTURES IN CAMERA DESIGN

Sigma is best known as a lens maker – and a very good one too – but it's also built cameras and the new BF isn't the only model to break from conventional design thinking. In fact, quirky cameras look to be a Sigma speciality.

Report by Paul Burrows.

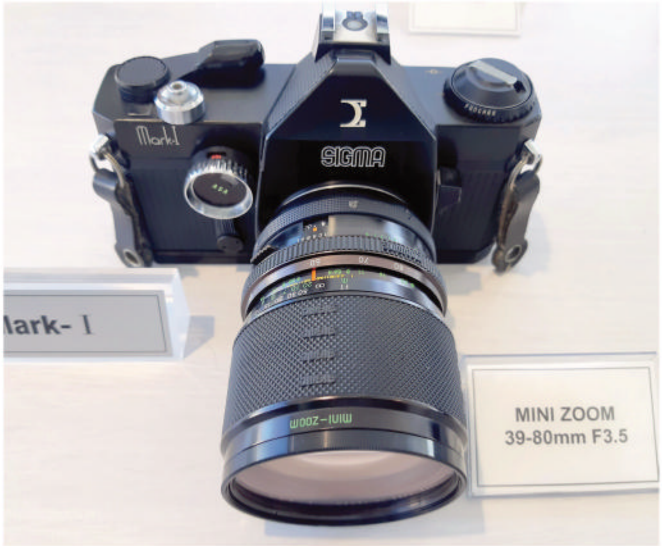
At the recent launch in Japan of the now much-discussed Sigma BF – if nothing else, the company has attracted huge amounts of attention – the attending journalists were also taken on a tour of the factory where it's made. This facility is located in Aizu, in the Fukushima prefecture, about 300 kilometres north of Tokyo. Aizu is the region and Aizu-wakamatsu is the main city with a population of around 120,000. In winter it snows… a lot. And this last winter it snowed even more so, buildings becoming surrounded by walls of snow that were metres tall. Elsewhere, front loaders scooped piles of snow into trucks to be taken to sports grounds, creating towering mountains that you could ski down. However, there are plenty of real ski resorts in the region even if northern Honshu isn't as well known for winter sports, at least internationally, as the even more northerly island of Hokkaido.

Sigma is very proud of its Aizu facility – and that all its products are marked 'Made In Japan' – which was established in 1973 and has since steadily expanded so the total site now covers around eight hectares and employs around 1600 people which includes engineers and skilled workers. Apparently, the good citizens of Aizu have a mentality that particularly suits the manufacture of high-precision products. Sigma's efforts to reduce the factory's environmental impact includes numerous recycling programs, and even extends to growing vegetables, fruit and herbs for use in the staff canteens and at functions (we sampled crisps made from Sigma's home-grown potatoes). Additionally, the quality of the local spring water is good enough for it to be used in various washing processes.

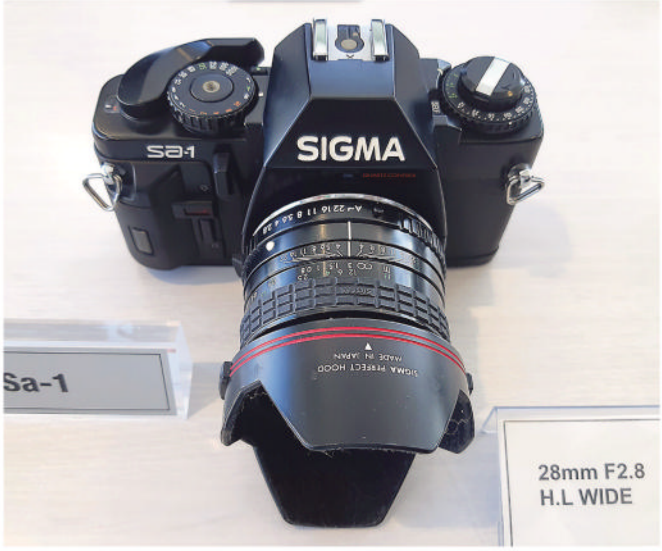
Keeping It All In-House

Everything is done at the Aizu plant from the moulding and machining or stamping of components – in plastics such as polycarbonate, brass, stainless steel, aluminium, magnesium alloy and, of course, optical glass – to the final assembly and testing. It's called a vertically integrated factory.

Sigma actually makes its own precision moulds so, for example, there are over 1000 for use in its 38 injection-moulding machines. And it can make around 10,000 aspherical lens elements daily in its 70 high-tech, glass-moulding machines. Spherical elements, incidentally, are still cut and polished by hand and, indeed, many of the stages involved in the manufacture of a lens requires the precision and patience of a human worker. Interestingly, though, a number of the automated processes have been designed by these very same workers



▲**Sigma Mark-1 (1976).** M42 screwthread mount 35mm SLR based on the Ricoh Singlex TLS. Manual exposure control with built-in CdS TTL metering.



▲**Sigma SA-1 (1983).** K mount 35mm SLR based on the Ricoh XR7. Aperture-priority auto exposure control.

▲**Sigma AF35D-TF (1987).** Boxy 35mm compact with 36mm f/2.8 autofocus lens, built-in flash and motorised film transport.

▲**Sigma SA-300 (1992).** First 35mm SLR with the in-house SA bayonet lens mount. Multi-mode with DX automatic film speed setting.

▲**Sigma Mini Zoom 105 Macro (1994).** Fully automatic 35mm compact with 38-105mm f/2.5 autofocus zoom and a 13-36mm panorama mode.

▲**Sigma SA-5 (1997).** The first autofocus Sigma 35mm SLR, with eight segment multi-zone metering, built-in pop-up flash and 3.0 fps continuous shooting.

who presumably, at some point, thought 'There has to be a better way'. One example is the edge painting of lens elements – done with black paint in order to prevent reflections from the edges – and which, not surprisingly, requires a very steady hand, but will soon be automated using a machine designed in-house by those brush-wielding workers. Sigma has also designed a machine for conducting MTF tests – the only one in the world at the moment – which was previously a manual operation so now every lens that comes off the production lines is tested rather just a random sample. If something has gone amiss with a single unit during manufacture – which can happen, albeit very infrequently – this machine will pick it up… rather than a customer. Quality control doesn't come much tighter than this.

> "In the digital era, Sigma started to do things differently, adopting the three-layer Foveon sensor for its first DSLR in 2002."

A Layered Approach

On display in a showroom at the Aizu factory are the many milestone products in the history of Sigma since it was founded in 1961, and obviously many of these are lenses, but there's also a surprising number of cameras.

The line-up – which commenced in 1976 with a 35mm SLR based on a Ricoh model – shows that Sigma largely stuck with convention with its early film cameras which also included quite a number of fully-automatic compacts. In the digital era, Sigma started to do things differently, adopting the three-layer Foveon sensor for its first DSLR, the SD9 which was launched in 2002. The Foveon X3 sensor was developed in the USA as an alternative to the (still) widely-used Bayer pattern of RGGB filters positioned over clusters of four photodiodes. Creating a full colour image thus requires interpolation (specifically demosaicing) and Foveon reasoned that this compromised image quality – specifically sharpness – and came up with a sensor structure comprising three vertically-stacked layers of photodiodes, individually sensitive to blue, green and red (top to bottom). Thus each photosite delivered full RGB colour and effectively three times the resolution (much as now happens with high-res pixel-shifting

SIGMA
SA-7
SIGMA

▲**Sigma SA-7 (2001).** Replacement for the SA-5 with restyled body, phase-detect AF with updated algorithms, eight-segment multi-zone metering, built-in flash, LCD info screen, auto exposure bracketing and more.

SIGMA
SA-9
SIGMA ZOOM
SIGMA

▲**Sigma SA-9 (2001).** Higher-spec sibling to the SA-7 with 1/8000 second top shutter speed, date back and 3.0 fps continuous shooting.

▲ **Sigma SD9 (2002).** The first Sigma DSLR and also the first production camera to use the Foveon X3 three-layer sensor. Slightly smaller than 'APS-C' in imaging area. Effective resolution was theoretically 10.3 megapixels (3x3.4 MP), but nobody really agreed on how a Foveon sensor's res accurately equated to a conventional Bayer filter imager. No JPEG output, only X3F lossless compressed RAW files.

SIGMA
SD10
SIGMA

▲ **Sigma SD10 (2003).** Rapid follow-up to the SD9 to address the latter's many issues. Updated Foveon X3 sensor with increased sensitivity – still at 10.3 megapixels effective resolution – revised power supply and improved AF performance. Still no JPEG capture mode though.

> "Sigma liked the Foveon sensor so much that, in 2008, it bought the company and has continued to work on trying to improve the performance."

multi-shot capture). In practice, however, there have been problems, particularly with the red layer – i.e. the deepest – because a lot of light is lost on the way so the result is less sensitivity and more chroma (colour) noise. Nevertheless, Sigma liked the Foveon sensor so much that, in 2008, it bought the company and has continued to work on trying to improve the performance, but this has been even more problematic with a full frame imager (all the X3 sensors so far have been 'APS-H', 'APS-C' or slightly smaller). Although nothing has been said officially, it looks very much like the Foveon experiment is finished.

After Kodak's much-publicised fall-out with Canon, it switched its DSLR platform to Sigma's SA-9 body refitted with the EF mount and using its own 14 megapixels full frame CMOS sensor. This camera was called the DCS Pro SLR/c and was introduced in 2004, but just over a year later Kodak ended its DSLR program. Always a small player in this sector, Sigma also turned its attention to making compact digital cameras with a wider appeal, starting with the DP-1 in 2008. It used the same 14.15 MP Foveon X3 sensor as the SD14 DSLR (which was actually slightly smaller than 'APS-C', giving a focal length magnification factor of 1.7x)

▲ **Sigma SD14 (2007).** Replacement for the SD9 with updated Foveon sensor giving 14.15 megapixels (i.e. 3x4.69) effective resolution and introducing JPEG capture as well as X3F RAWs.

▲ **Sigma DP1 (2008).** First Sigma digital compact camera and with a fixed 28mm-equivalent lens. Used the same 14.15 megapixels Foveon X3 sensor as the SD14 DSLR (incidentally, still slightly smaller than 'APS-C' in size).

▲ **Sigma DP1 Merrill (2012).** Although the model name remained the same, this was an all-new model with a higher-res Foveon X3 sensor that had three 15-megapixels layers to give 46 MP in total (44.3 MP effective). It was also 'APS-C' in size so there was a new 19mm f/2.8 lens to maintain an effective focal length of 28mm. The Merrill name is a tribute to the Foveon founder.

▲ **Sigma DP2 Merrill (2012).** A redesign of the original DP2 from 2009, again with the 46 MP 'APS-C' Foveon X3 sensor and a new 30mm f/2.8 lens to maintain an effective focal length of 45mm.

and a 16.6mm f/4.0 fixed lens (effectively 28mm). Although fairly conventional in design, but not the idea of a bigger sensor in a small camera, the high-end DP1 began Sigma's reputation for making cameras with, shall we say, more individualistic appeal. A higher-res Foveon X3 sensor was introduced in 2012 with three 15-megapixels layers to give 46 MP in total (44.3 MP effective) which was impressive for the time. It was also now fully 'APS-C' in size so the DP1 was redesigned with a 19mm f/2.8 lens to still give an effective focal length of 28mm. The new sensor also appeared in the SD1 DSLR and the DP2 compact which had a 45mm-equivalent fixed lens. Around this time, Sigma also began adding the name "Merrill" to various editions of its cameras, in honour of Richard B. Merrill (1949-2008), founder of Foveon and the inventor of the X3 vertical colour filter technology. In most cases though, there was virtually no differences between the versions.

Keeping The Noise Down

With the next-generation DP Quattro series of fixed-lens cameras, launched in 2014, Sigma went completely *off piste* with the styling while also introducing a much-revised Foveon sensor, primarily designed to help reduce the issues with colour noise.

Still with three layers, the new X3 sensor now used only the top one to capture luminance information (i.e. brightness) along with the blue colour while the other two captured colour only (i.e. green and red). Sigma called this the "1:1:4 structure", hence the Quattro name. The brightness information was subsequently added to these two layers as the image was processed in the camera. As only the top layer captured the full resolution, the Quattro series cameras had an effective pixel count of 19.6 million (but there was a 'Super High' quality mode which used interpolation to

▲ **Sigma SD1 Merrill (2012).** DSLR with the 46 MP 'APS-C' Foveon X3 sensor, 11-point AF, magnesium alloy body with weather sealing, and continuous shooting at 6.0 fps. Merrill-badged version virtually unchanged from the original SD1 (2011), but significantly cheaper.

SIGMA
SIGMA
DP3
Merrill

▲ **Sigma DP3 Merrill (2013).** New model in the second-gen DP series compacts which matched the 46 MP 'APS-C' Foveon sensor with a 50mm f/2.8 equivalent to 75mm.

dp1
dp1
Quattro

▲ **Sigma DP1 Quattro (2014).** Revised sensor design to help counter the colour noise (especially in the red channel) and sensitivity issues. New "1:1:4 structure" gave rise to the Quattro name, and only the top layer captured luminance information (plus blue) while the two below recorded colour only (i.e. green and red). Effective resolution was 19.6 megapixels (i.e. the top layer only), but interpolation was used to generate 39 MP JPEGs. The DP1 Quattro had a 19mm f/2.8 fixed lens equivalent to 28mm.

dp2
dp2
Quattro

▲ **Sigma DP2 Quattro (2014).** Actually launched a little before the DP1 model. Exactly the same feature set but with a 30mm f/2.8 lens equivalent to 45mm.

give 39 MP for JPEG capture).

There were initially three models – the DP1 Quattro with a 19mm f/2.8 fixed lens (equivalent to 28mm), the DP2 with a 30mm f/2.8 lens (45mm) and the DP3 with a 50mm f/2.8 lens (75mm). The DP0 Quattro followed in early 2015 and had a 14mm f/2.8 lens, equivalent to 21mm. These were cameras with plenty of quirks and foibles – among them no EVF, no video, no image stabilisation and slow operation – but they gained a loyal following of dedicated enthusiasts and performed well in terms of image quality. By the way, Foveon X3 sensors can't record video full stop.

Next came the sd Quattro series in 2016 and these were mirrorless bodies using Sigma's own SA bayonet lens mount as per the earlier 35mm SLRs and the DSLRs. The sd Quattro model had an 'APS-C' size sensor, again with the native resolution of 19.6 megapixels, but the option of 'Super High' quality capture for JPEGs at 39 MP. The sd Quattro H featured the largest size Foveon sensor seen to date, equivalent to the 'APS-H' format in imaging area to give a focal length magnification factor of 1.3x. The native resolution is 25.6 megapixels, but with the option of an upscaled 51.2 megapixels when shooting in the proprietary 14-bit X3F RAW format which required Sigma's clunky Photo Pro software. Perhaps for this reason, the sd H also had the option of 12-bit Adobe DNG RAW capture. Notably, these cameras have a built-in EVF (along with a tilt-adjustable monitor screen) and the styling, while not as radical as that of the fixed lens Quattro models, is still quite unusual. Again, there's a dedicated following with the H model, in particular, maintaining pretty buoyant pricing on the second hand market… mostly because of its unique sensor despite there still being performance limitations.

▲ **Sigma DP3 Quattro (2014).** Same as the other DP Quattro models, but with a 50mm f/2.8 lens equivalent to 75mm, and seen here with the optional hood that turned the monitor screen into an eyelevel viewfinder.

▲ **Sigma DP0 Quattro (2015).** Final model in the SD Quattro series and with a 14mm f/2.8 lens equivalent to 21mm.

▲ **Sigma sd Quattro (2016).** Mirrorless camera series using Sigma's own SA bayonet lens mount. The standard model had an 'APS-C' Foveon Quattro sensor with 19.6 megapixels effective resolution, but with the option of 'Super High' quality capture for JPEGs at 39 MP. Quirky styling once more.

▲ **Sigma sd Quattro H (2016).** 'APS-H' format sensor is the largest Foveon chip seen so far. The native resolution was 25.6 megapixels, but with the option of an upscaled 51.2 megapixels when shooting in the proprietary 14-bit X3F RAW format.

Look At Me

With the adoption of a conventional Bayer-filtered sensor for the current fp series mirrorless cameras, Sigma embraced video with great enthusiasm and, consequently, these very compact bodies have near-cinematic capabilities and are particularly suited to rig or gimbal usage.

This is now the L mount era so there's a choice of lenses beyond Sigma's own offerings, although it still has the most extensive range. The original 24 megapixels fp and the current fp L model with 61 megapixels on tap continue Sigma's desire to do things differently in camera design. Apart from being the smallest and lightest full frame mirrorless bodies – even after the arrival of Panasonic's Lumix S9 which, of course, is also an L mount model – they're still fairly idiosyncratic in both form and function.

It seems that, fairly early on, Sigma determined it could never compete with the biggest camera brands and decided instead to attract attention in other ways. Consequently, it isn't about chasing big sales numbers although the aim is probably always to at least break even, but having the courage of convictions which, when realised, are convincing enough for others to buy into. The new BF is Sigma's most radical departure from convention yet, but it's probably only happened because none of the company's other adventures in camera design have been complete failures. It's undoubtedly bold, brave and probably, possibly downright bonkers, but it's not without either insight or inspiration… and that's always going to start a conversation.

As Oscar Wilde famously noted, "There's only one thing in the world worse than being talked about, and that is not being talked about".

Paul Burrows travelled to Japan courtesy of Sigma Corporation and C.R. Kennedy & Company Pty Ltd.

REPORT BY **PAUL BURROWS**

NIKON
Z5II

Nikon
Z
Z 5 II
ISO
Fn1
Fn
NIKKOR
24-50/4-6.3
Z 24-50mm 1:4-6.3 ⌀52

▲Externally, the Z5II isn't much different from its predecessor, but inside it's another story, starting with a new sensor and Nikon's much faster, latest-gen 'EXPEED 7' processor.

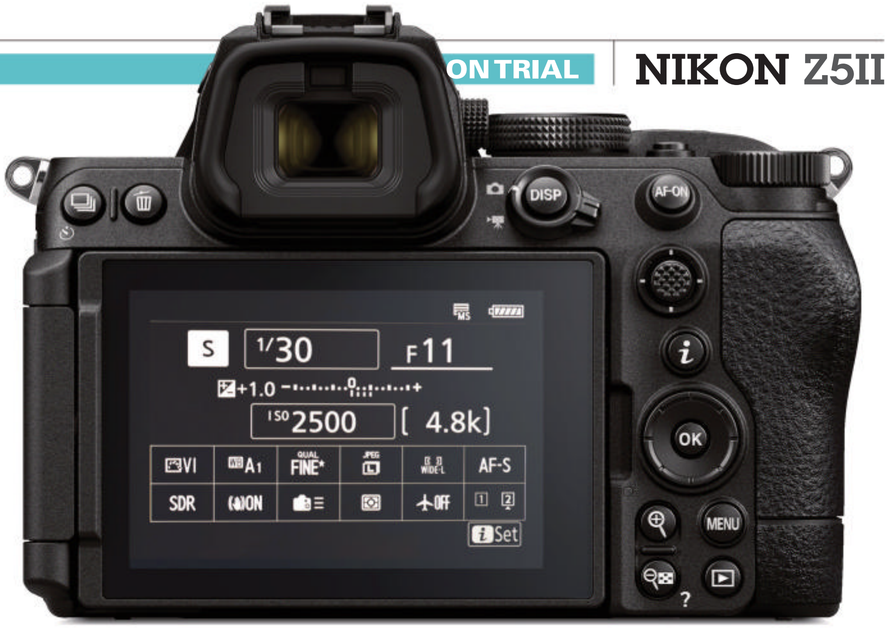
NOW WITH EXTRA FIZZ

A new sensor and a faster processor give the next-gen Nikon Z5 a big performance boost for both photography and video… and make the Mark II model fabulous value for money in the full frame mirrorless class.

Nikon made its reputation on pro-level high-end cameras – essentially starting with the legendary F 35mm SLR – but it's proved to be equally adept at building entry- and enthusiast-level models that are just a little bit ahead of the competition. This has particularly been the case with its DSLRs – think of the D600/610 and D750 which even attracted professional users – and now with its full frame, Z mount mirrorless system (which Nikon dubs 'FX'). The original Z5 was – and still is – a great all-round package at a very competitive price for a full frame camera, and the Mark II model carries on from here, embodying many of the updates and new features that Nikon has introduced since the original was introduced back in mid-2020. So there are elements from the Zf, Z6II, Z6III and even the pro-orientated Z8 and Z9 are all mixed into the Z5II which, despite an inevitable price hike (although not by as much as you might expect) continues to represent huge value for money… in fact, far better than its predecessor.

The Z5II inherits the 24.5 megapixels BSI-type CMOS sensor that's also used in both the Zf and Z6II models and which is mated with Nikon's latest-generation 'EXPEED 7' processor which means there's some significant increases in speed over the previous model, both for shooting stills and the video frame rates (see the Making Movies panel for a full rundown of the camera's expanded video capabilities).

The maximum image size is 6048x4032 pixels with a choice of two smaller sizes for both JPEG and RAW capture. As with all the recent Z mount bodies 10-bit HEIF capture is provided and the RAW capture settings comprise 'High Efficiency' and 'High Efficiency*' along with a conventional



▲ Rear panel control layout has both a joystick-type controller and a four-way keypad. Monitor-based 'i-Menu' info display provides direct access to quite a number of functions via touch control.

lossless compressed option. These 'High Efficiency' settings employs a more efficient form of lossy compression – essentially using the H.265 video codec – to deliver close to the same image quality as an uncompressed RAW file, but at either one-third or one-half the file size. HEIF capture is selected by switching the camera's Tone Mode setting from standard dynamic range (SDR) to HLG (hybrid log gamma) high dynamic range.

The JPEGs and HEIFs can be captured at one of three compression levels and with a choice of three aspect ratios – 3:2, 1:1 and 16:9. All the RAW file options capture 14-bit RGB colour. There's both RAW+JPEG and RAW+HEIF capture options.

The 'EXPEED 7' processor enables continuous shooting at up to 30 fps when using the Z5II's sensor-based shutter and at the full resolution, but only using JPEG/large/normal capture. The buffer memory allows for four seconds at this frame rate so you'll get around 120 frames per burst. 'Pre-Release Capture' comes as part of the 30 fps speed package (so again, it's JPEGs only) and can be set to 0.3, 0.5 or 1.0 seconds of buffering prior to full shutter release (i.e. when the shutter button is at the half-way position for metering and autofocusing). As on the Zf, there's also a 'Post Release Burst' option which can be used to minimise the subsequent burst length to one, two or three seconds, or 'MAX'.

If you want to shoot fine-quality large JPEGs, the top speed is 15 fps with the sensor shutter and 14 fps with the focal plane shutter, but the burst length extends to 200 frames. The top speed with RAW capture is 11 fps and 10 fps for HEIFs, again with up to 200 frames in a burst.

Continuous AE adjustment between frames is available at 7.8 fps for JPEGs and 7.0 fps for RAW files, but the ongoing Nikon curiousity of only AF adjustment at faster speeds – in this case up to 14 fps – appears to continue here.

> NIKON MADE ITS REPUTATION ON PRO-LEVEL HIGH-END CAMERAS, BUT IT'S PROVED TO BE EQUALLY ADEPT AT BUILDING ENTRY- AND ENTHUSIAST-LEVEL MODELS THAT ARE JUST A LITTLE BIT AHEAD OF THE COMPETITION."

In-body image stabilisation is provided via five-axis sensor shifting and gives up to 7.5 stops of correction for camera shake at the centre of the frame, and up to 6.0 stops at the edges. There's the choice of Normal and Sport modes, the latter disabling the horizontal correction to allow for panning. As with the recent Z mount models, the Z5II also has 'Synchro VR' which works in conjunction with the optical stabilisation in a lens, adding to the effectiveness of the corrections for pitch and yaw. There's also the option of linking the stabilisation to the active focus point rather than to the centre of the image. 'Focus Point VR' again enhances the effectiveness of the image stabilisation which otherwise progressively reduces towards the edges of the frame (down to 6.0 stops in this case). However, it won't work if you are using the 'Auto Area' AF mode for automatic point selection and it's selecting multiple points. It also doesn't work with the OIS-equipped Nikkor Z lenses, and it isn't available when shooting video.

Sensor shifting also drives the Z5II's 'Pixel Shift Shooting' function which can be set to capture four, eight, 16 or 32 shots with the options of a shutter delay timer (up to ten seconds) and an adjustable interval between shots (up to 30 seconds). The four-shot setting records the full RGGB colour information at each pixel point – which enhances the overall reproduction since there's no interpolation involved – and the eight-shot option is essentially adding multi-shot noise reduction. Step up to 16 shots and you get full colour plus a resolution of 96 megapixels (i.e. 4x24) with the 32-shot setting adding lower noise to the mix. However, the camera needs to be on a tripod and the subject completely static such as a landscape. Furthermore, 'Pixel Shift Shooting' only captures RAW files so these need to be processed post-camera in Nikon's NX Studio software (which is free) so no JPEG option and no in-camera compositing.

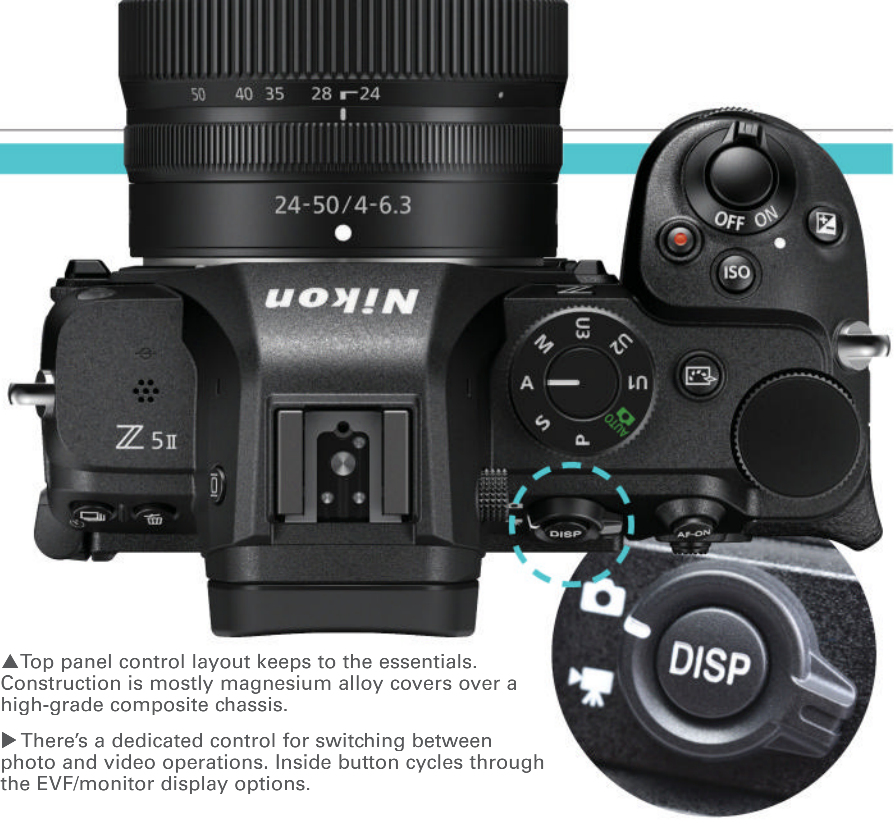
The Z5II has dual memory card slots, both for SD devices and with UHS-II and V90 speed support. The file management options are Overflow, Back-Up or the separate recording of JPEG/HEIF and RAW

Files, or two different sizes of JPEG/HEIF images.

GOOD LOOKING

The in-camera processing for JPEGs starts with the full set (currently) of Nikon's 'Picture Control' presets which now numbers 11 and includes the most recent additions of Flat Monochrome and Deep Tone Monochrome, plus Rich Tone Portrait. In a nutshell, Flat Monochrome delivers softer tones while Deep Tone Monochrome punches them up in the way that a red contrast filter does with film. Rich Tone Portrait is tuned to enhance the reproduction of skin tones with a wider range of tonality while also managing the clipping of the brighter whites so clearly wedding photographers are in mind here.

As before, there's additionally a set of 20 'Creative Picture Control' settings which are essentially special effects, but have the same choice of adjustment parameters as the standard picture presets along with a choice of ten effect levels. There are nine slots for saving the custom 'Picture Controls' created in-camera. Following the Z6III, the Z5II also has the 'Cloud Picture Control' facility for the creation and downloading of 'Flexible Colour Picture Control' profiles for both stills and video. These are created in NX Studio and uploaded to the camera via a memory card, and they allow for much more customisation than is provided in-



▲Top panel control layout keeps to the essentials. Construction is mostly magnesium alloy covers over a high-grade composite chassis.

▶There's a dedicated control for switching between photo and video operations. Inside button cycles through the EVF/monitor display options.

camera. For example, you can adjust the hue, chroma and brightness for up to eight colours using the 'Colour Blender' control while there's a 'Colour Grading' tool for adjusting the colour in highlights, mid-tones and shadows. 'Flexible Picture Control' profiles –or "imaging recipes" as Nikon calls them – created by other photographers can be directly downloaded to the camera from the Nikon Image Cloud and this is already an ever-expanding library of customised looks.

The Z5II also has the 'Skin Softening' function – which was first seen with the Z8 – and has the choice Low, Normal or High settings. It also has the 'Portrait Impression Balance' function which was introduced on the Zf and has three Mode settings that you create using adjustments for colour hue – over a magenta-to-yellow range – and brightness. This also allows for tweaking of the skin tone reproduction and is obviously a more selective – and subtler – tool than trying to do the same thing with the white balance settings.

There's a multiple exposure facility which can combine up to ten shots (with various options for managing the overall brightness) and an intervalometer which can record up to 9999 frames in a sequence. Additionally, there's provision for adding in exposure bracketing at each point for up to nine shots which means, if so desired, you could record up to 9999x9 shots in a sequence.

The auto bracketing functions are for exposure, flash, exposure and flash, white balance and the camera's Active D-Lighting process for dynamic range expansion. Additionally, there's a 'Focus Shift Shooting' function which can capture up to 300 frames, adjusting the focus with each via a predetermined step from one (narrow) to ten (wide). These frames can subsequently be assembled post-camera for focus stacking.

The adjustable in-camera lens corrections are for vignetting, diffraction and distortion.

There's also the standard Nikon fare of 'Active D-Lighting' (ADL) processing to expand the dynamic range which, on the Z f, has a range of settings from Low to Extra High; noise reduction processing for both long exposures and high ISO settings; and an 'HDR Overlay' function which combines two images with each exposure adjusted to preserve more detail in the shadows and the highlights. The amount of exposure adjustment is set as HDR Strength from Low to Extra High, or there's an Auto setting

MAKING MOVIES

While Nikon implies that the Z5II is more a photographer's camera than anything else, it actually has an impressive suite of video features and is capable of more than just occasionally grabbing a few clips. The 'EXPEED 7' processor's speed steps it up to 4K UHD using the full sensor width (i.e. oversampled from 6K) at 24/25/30 fps and at 50/60 fps with a 1.5x crop. This can be with 10-bit 4:2:2 colour using the H.265 codec or in H.264 with 8-bit colour. More interestingly, the camera records 12-bit N-RAW footage internally and to V90-speed SDXC memory card which is a first for a Nikon Z mount camera (the Z6III, for example, uses a much faster CFexpress Type B card for this). The N-RAW frame rates with the Z5II aren't as numerous as on the Z6III, but you can record at 4032x2268 pixels – a sort of half-way-house between 4K and 5K, but still with the 16:9 aspect ratio – or at 3984x2240 pixels which represents a 1.5x crop; both at 24, 25 or 30 fps. Usefully, there's a proxy recording capability when shooting N-RAW which creates smaller-sized files for easier guide editing. Full HD video is recorded at up to 100/120 fps for slowmo effects – again with the choice of 8-bit or 10-bit colour – and here there's a 'Hi-Res Zoom' function which operates at up 2.0x via cropping into the 4K res so there's no loss of image quality in 2K.

Nikon is starting to leverage more of RED's video know-how since it bought the cinema camera maker a while ago, and this evident with the Z5II's N-Log profile recording which now has the option of processing the files with RED's characterful cinematic LUTs (available as free downloads).

The Z5II has built-in stereo microphones for 24-bit 48 kHz PCM linear audio recording in the MOV and RAW formats. The audio functions comprise auto/manual levels, an attenuator, adjustable frequency response (wide range and vocal range) and a wind noise filter. Both a stereo microphone input (switchable between mic or line level) and a headphone output (with adjustable volume) are provided.

The video feature set also includes the HDR HLG profile, hybrid IBIS and electronic image stabilisation (which gives a 1.25x crop), a 'Product Review' autofocus mode, a video self-timer, time code support (with drop-frame correction), time-lapse movies (2K or 4K), auto flicker detection and correction (with the high-frequency option), zebra patterns (a choice of two with adjustable highlight threshold and mid-tone range), and a waveform monitor display (which shows the luminance – or brightness – distribution in a scene). As noted in the main text, the variable-angle LCD monitor screen has benefits for video shooters as does the 'Touch Fn' controllability. The newer AF control algorithms and the subject detection modes are as beneficial for video as they are for still photography. Again too, subject detection is also available with manual focusing. All the 'Picture Control' and 'Creative Picture Control' settings can be applied to video which includes the latest Flat Monochrome and Deep Tone Monochrome B&W profiles and the Rich Tone Portrait colour profile for improved skin tone reproduction. The Z5II also supports UVC/UAC streaming over its USB C port.

There's definitely enough here for the Z5II to work as a content creator's tool – especially with the features dedicated to this application – but it's definitely more versatile than this with the 4K image quality to back it up.

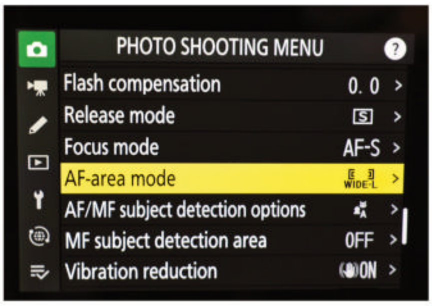
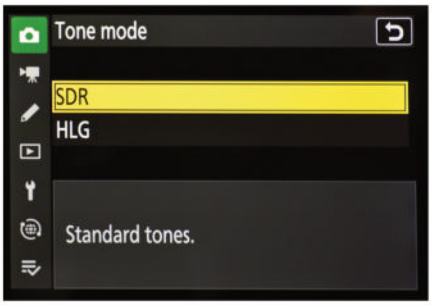


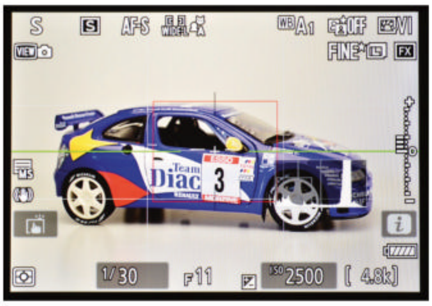
PHOTO SHOOTING MENU
Flash compensation 0.0
Release mode S
Focus mode AF-S
AF-area mode WIDE-L
AF/MF subject detection options
MF subject detection area OFF
Vibration reduction ON

▲ Nikon's menu layout remains one of the most logical and easily navigated around.

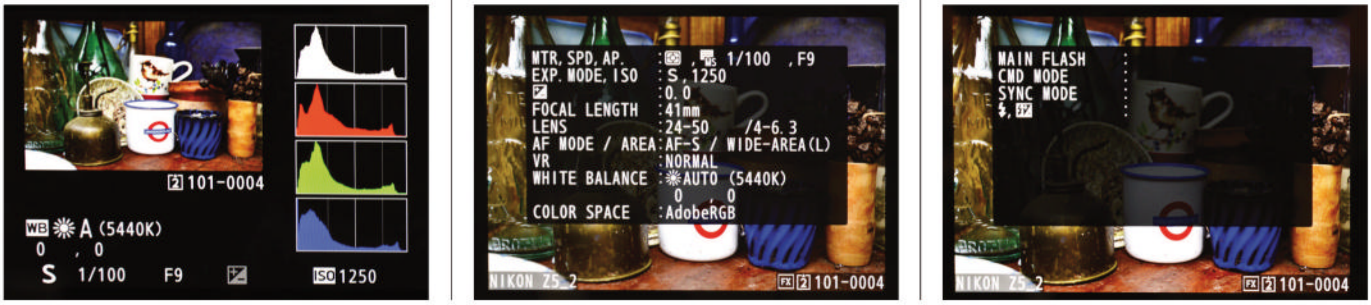


Tone mode
SDR
HLG
Standard tones.

▲ Z5II has 10-bit HEIF capture selected by switching from 'SDR' or 'HDR' in the main 'Photo Shooting Menu'.



▲ Live view screen elements include guide grids, a real-time histogram, dual-axis level indicator and a centre marker. You can individually configure up to five displays so you don't have to have everything on at the same time.

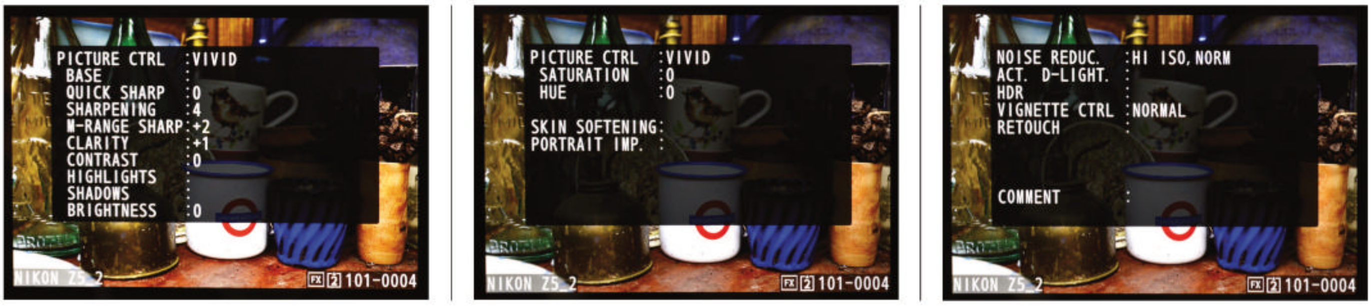


101-0004
WB A (5440K)
0 , 0
S 1/100 F9 ISO 1250

MTR, SPD, AP. : , 1/100 , F9
EXP. MODE, ISO :S, 1250
:0.0
FOCAL LENGTH :41mm
LENS :24-50 f/4-6.3
AF MODE / AREA :AF-S / WIDE-AREA(L)
VR :NORMAL
WHITE BALANCE :AUTO (5440K)
0 , 0
COLOR SPACE :AdobeRGB
NIKON Z5_2 101-0004

MAIN FLASH :
CMD MODE :
SYNC MODE :
NIKON Z5_2 101-0004

▲▼ Review/replay screens cycle through a wide range of pages, including brightness and RGB channel histograms, and info overlays for all the capture settings.



PICTURE CTRL :VIVID
BASE
QUICK SHARP :0
SHARPENING :4
M-RANGE SHARP :+2
CLARITY :+1
CONTRAST :0
HIGHLIGHTS :
SHADOWS :
BRIGHTNESS :0
NIKON Z5_2 101-0004

PICTURE CTRL :VIVID
SATURATION :0
HUE :0
SKIN SOFTENING :
PORTRAIT IMP. :
NIKON Z5_2 101-0004

NOISE REDUC. :HI ISO, NORM
ACT. D-LIGHT. :
HDR :
VIGNETTE CTRL :NORMAL
RETOUCH :
COMMENT :
NIKON Z5_2 101-0004

which adjusts according to the contrast range present in the scene.

STAYING SHARP

The Z5II's hybrid phase/contrast detection autofocusing system has 299 measuring points for auto selection (273 for manual setting) which gives a frame coverage of 89 percent vertical and 96 percent horizontal.

> NIKON MAKES SUBJECT RECOGNITION AVAILABLE WITH MANUAL FOCUSING WHICH IS PARTICULARLY HANDY IF YOU'RE USING AN OLDER F MOUNT LENS WITH AN ADAPTER."

The area modes range in size from 'Pinpoint' to 'Auto Area AF' which is essentially using the full point count across the frame. In between are Single-Point AF, two 'Wide Area' modes – either Large or Small – and three 'Dynamic Area' options – Small, Medium and Large – where, if the subject moves, the focusing point automatically switches to any of the surrounding ones. There are additionally are two custom 'Wide Area' modes which allow you to create your own shapes from a choice of 33, either square or rectangular from 1x1 to 21x13 points.

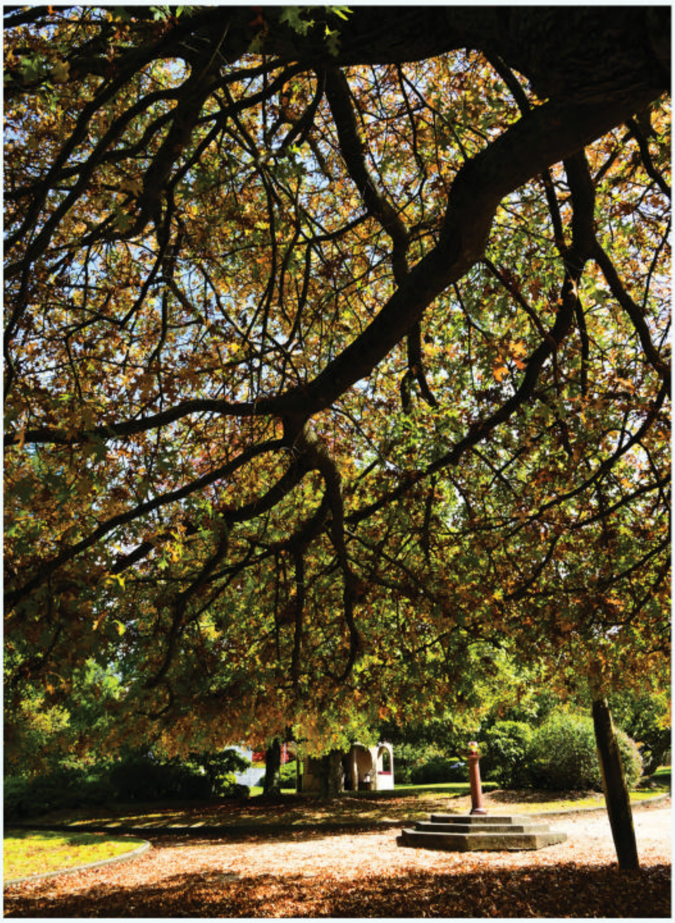
The subject recognition is for People, Animals, Birds, Vehicle and Aircraft. These expand into body/head/face/eye detection for humans, body/head/eye detection for animals and birds; and cars, motorcycles, bicycles and trains within the Vehicles category. The Aircraft mode includes helicopters. Additionally, there's an Auto mode which will find any of the nine definable subjects in a frame and, as we've noted previously, Nikon makes subject recognition available with manual focusing which is particularly handy if you're using an older F mount lens with the FTZ or FTZ II adapter. After the subject is identified, the magnified image focus assist kicks in automatically and enlarges this part of the frame so adjust the focus accordingly.

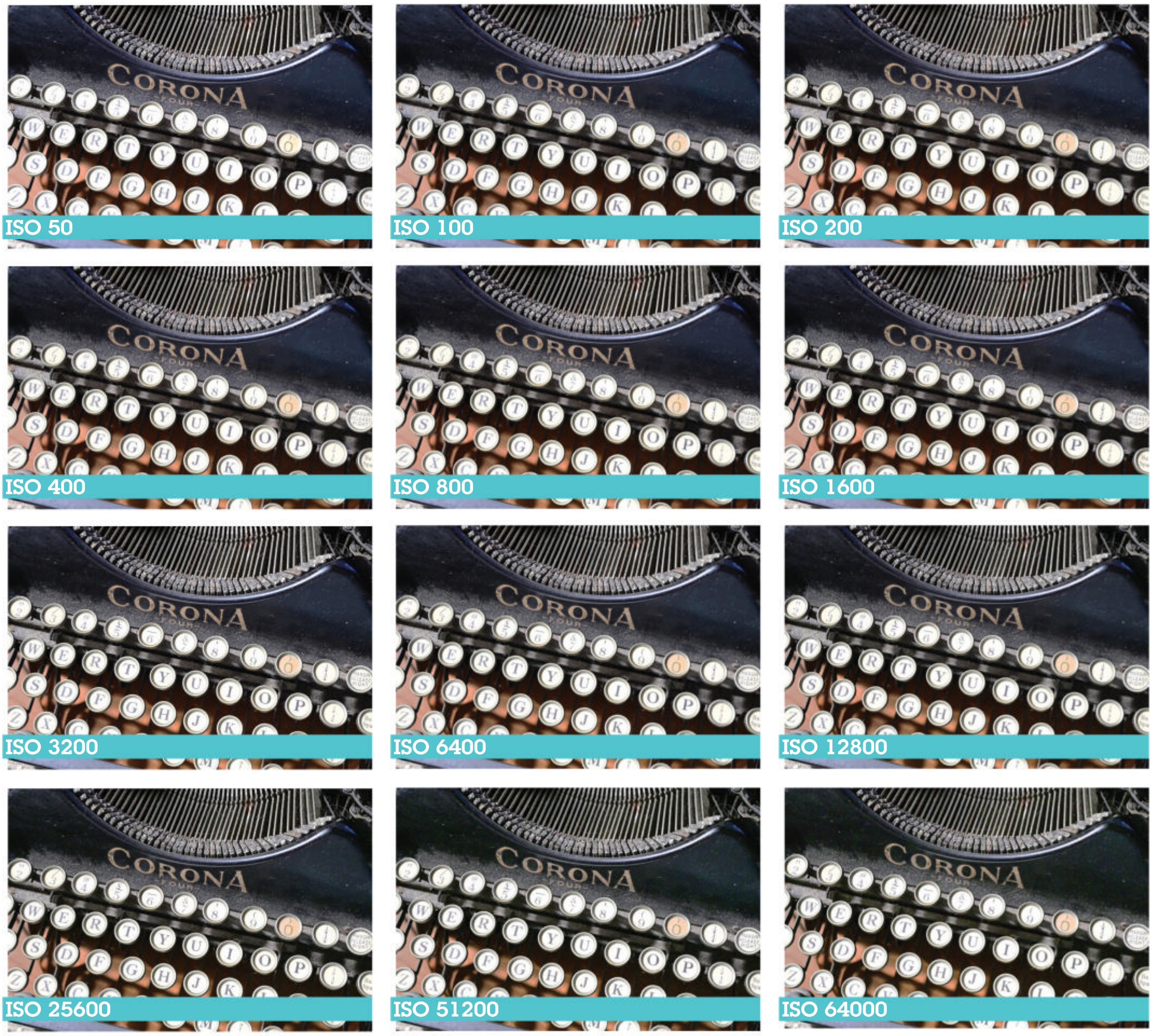
As with all the latest full frame models from the Z9 to the Z6III, the Z5II '3D Tracking AF' which worked to great effect on Nikon's top-end DSLRs and simply follows whatever object is selected with the initial focus lock-on. It then uses the focusing distance and colour to track the subject, but it can also be used with subject detection. Additionally, you can fine-tune the tracking to better match the type of movement – essentially either Steady or Erratic – and the response to a blocked shot – from Quick to Delayed over five steps.

The AF's low light sensitivity extends all the way down to EV -10 (at ISO 100 and f/1.2) without needing to resort to any special AF mode. This is made possible by making the PDAF pixels bigger and also the

Test images captured as JPEG/large/fine files, shutter-priority auto exposure control, Vivid 'Picture Control' preset and the ISO set between 100 and 800. Nikkor Z 24-50mm f/4.0-6.3. There's plenty of well-defined detailing with beautifully smooth tonal gradations and a wide dynamic range… a key benefit of the bigger pixels when you have 24.5 MP res on a full frame imager.

Blackheath
1
2

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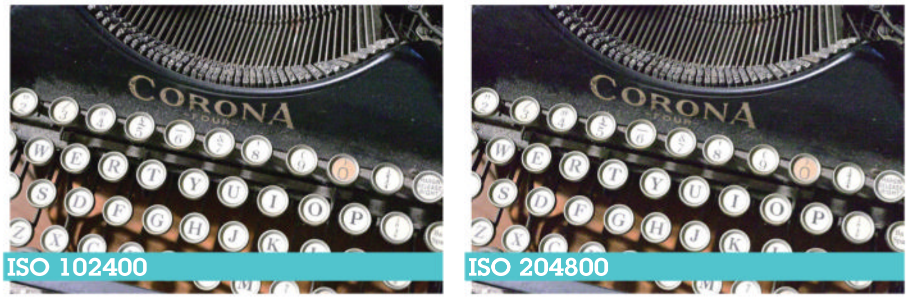

ISO 102400
ISO 204800

▲ The Nikon Z5II's sensor has a native ISO range of 100 to 64,000 with extensions down to ISO 50 and up to ISO 204,800. The sensor's dual-gain design means the noise reduction at the higher sensitivity settings starts from a higher base ISO and noise is inherently lower. The two base ISO settings are at 100 and 800, and the output circuits optimised for dynamic range and colour saturation (i.e. low gain), and sensitivity (i.e. low noise).

These images were captured as JPEG/large/fine files with the aperture set to f/11 and the exposure time varied to compensate for the adjustments to the ISO. High ISO and Long Exposure noise reduction processing are switched off. Nikkor Z 24-50mm f/4.0-6.3.

processing capabilities of the 'EXPEED 7' engine.

The Z5II retains a conventional focal plane shutter which is rated to 200,000 cycles and has a speed range of 900 seconds (that's 15 minutes) up to 1/8000 second plus both 'B' and 'T' timers for even longer exposures. Compared to 'B' when the shutter release has to be held down for the duration of the exposure, the 'T' setting allows for one press to start the exposure and a second to end it.

Flash sync is up to 1/200 second. The sensor shutter has a speed range of 30-1/8000 second and allows for silent shooting. The third option is the hybrid 'electronic first curtain shutter' and there's an 'Auto' setting so the camera will automatically switch between the shutter types as required (such as when setting the faster shooting speeds). There's also a shutter delay timer – which Nikon is now calling an "exposure delay mode" – with settings from 0.2 to 3.0 seconds – to allow for any physical vibrations related to operating the camera to die away.

The metering is sensor-based with a choice of multi-zone 'Matrix' metering, centre-weighted average, highlight-weighted average and spot measurements. Additionally, the multi-zone metering can be linked to face detection. With centre-weighted metering, the bias assigned to the central zone can be set to Small or Standard (which correspond to 8.0 mm or 12 mm) or you can switch to a fully-averaged measurement which uses the whole frame area equally. The auto exposure modes are supplemented by an AE lock, up to +/-5.0 EV of compensation and auto bracketing (over two, three, five, seven or nine frames with up to +/-3.0 EV of adjustment).

For white balance control there's a choice of three auto correction modes called 'Keep White', 'Normal' and 'Keep Warm'. There also the 'Natural Light Auto' setting which was introduced with the Z system and essentially maintains a colour balance that looks natural to the human eye. There are eight lighting presets plus you can make and store up to six custom settings. Additionally, every WB settings has fine-tuning or you can manually set the colour temperature over a range of 2500 to 10,000 degrees Kelvin. The auto bracketing for white balance adjusts over a sequence of three frames.

IN THE HAND

With the possible exception of the very chunky Z9, Nikon's full frame Z cameras all manage to look both appealing and businesslike at the same time. The Z5II is arguably one of the best looking of the contemporary designs and the most compact, being even smaller overall than the classically styled Zf. There's a substantial handgrip, complimented by a thumbrest at the rear, so the camera is very comfortable to hold and still feels well balanced even with longer, heavier lens fitted.

The body covers are magnesium alloy over a composite GRP chassis with weather protection which Nikon describes as "dust- and drip-resistant", but the illustration showing all the sealing points suggests it might be a bit more effective than this. The top panel layout comprises a chunky main mode dial with front and rear input wheels and dedicated buttons for setting the ISO, exposure compensation and the 'Picture Control' profiles. This last control is inherited from the Z50II and is very handy if you want to quickly change to a different profile when shooting.

The rear control layout has both a joystick-type controller and a four-way keypad, both of which can be used for navigational purposes or to select the AF points/zones. Also handy, there's a dedicated button here for setting the drive mode or activating the self-timer. Many of the controls are customisable in one way or another – and independently for shooting and playback – plus there's a pair of specifically multi-functional 'Fn' keys adjacent to the lens mount. There's also the multi-function control ring on the Nikkor Z lenses which can be set to manual aperture selection, exposure compensation adjustment or as a full-time manual focus override. Some Z lenses also have customisable 'Lens Fn' buttons.

The quick menu display in the monitor screen – which Nikon calls the 'i-Menu' – can also be customised and includes a total of 12 function tiles. These can be configured from a long list of user-assignable functions and there's the added convenience of touch control so you simply tap and go. The touchscreen implementation extends to the menus, AF point selection/focusing (with the option of auto shutter release), and the replay/review functions. It also includes the 'Touch Fn' feature introduced with the Zf and which has a number of operations, but includes focus point/zone selection while you're using the viewfinder. There's a big choice of touch area settings for both when the camera is held vertically or horizontally, and from full screen to the various quarters. 'Touch Fn' can also be used to switch the eye detection (i.e. between humans or animals), and activate either the guide grid or the level indicator.

Also inherited from the Zf is a fully-articulated monitor screen which can be turned through 180 degrees to directly face you if you're making a video presentation. The TFT panel itself is 8.1 cm in size with an increased resolution of 2.1 megadots, extensive touch controls, and adjustments for both brightness and colour balance.

The EVF is a 1.27 cm OLED panel with 3.686 megadots resolution and a magnification of 0.8x (50mm lens at infinity). As with the monitor, it's adjustable for both brightness and colour temperature. Once again, Nikon makes a point about the finder's increased brightness which is quoted at 3000 cd/m² (a.k.a. nits) and claimed to be six times brighter than its direct rivals.

There are five live view screen designs for both the EVF and monitor which can be separately customised as desired to include a level indicator, a real-time histogram, a guide grid and a centre marker plus either Simple or Detail info displays. There's a fifth option in the monitor which is an info display for the exposure settings and ten function indicator tiles with touch control for adjusting settings.

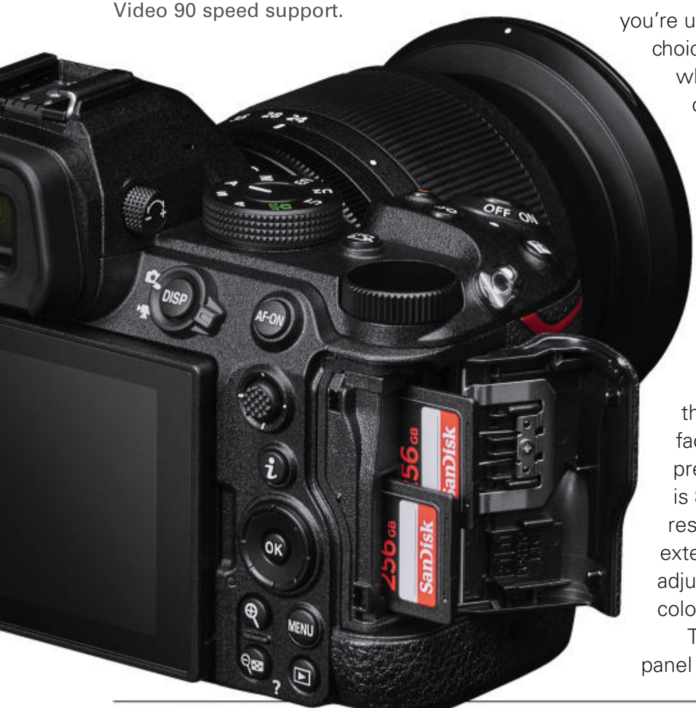
The touch screen implement also includes the 'i' menu – which overlays function tiles on the live view image – the main menus and the replay/review functions so there isn't much that you can't do by tapping on the monitor. In addition to the 'Touch Fn' operations mentioned earlier, there's also 'Touch AF' focusing with the option of automatic shutter release once it's achieved.

The Z5II also has the 'Starlight View' setting for the live image which brightens all the dark areas in the frame to assist with composition and manual focusing when shooting at night. There's also a 'Warm Display Colours' mode which switches to black-on-red displays to help preserve your night vision. You can opt for everything to be toned down this way or just the displays and read-outs (i.e. not the live view image or pictures in replay). Usefully too, you can adjust the brightness to give the most comfortable viewing for the ambient conditions.

The review/replay displays include pages of four, nine or 72 thumbnails; zooming up to 32x and a slide show with adjustable frame intervals. Individual images can be displayed full-frame either with or without basic capture info or as thumbnails accompanied by a full set of brightness and RGB histograms, or a highlight warning. Additionally, the autofocus points or zone used to take the shot can also be shown. Cycling through the replay options also brings up five pages of detailed capture data – including the lens model and the taking focal length – which are superimposed over the image. You can record copyright info, IPTC data and voice memos.

The interfaces are USB Type C, HDMI Type D and a stereo audio input and an output (switchable to accept a wired remote trigger). Wireless connectivity is WiFi (either the 2.4 or 5.0 GHz bands) and Bluetooth 5.0 LE (via the Nikon SnapBridge app). The USB C port supports in-camera battery recharging and the Z5II uses the EN-EL15c power pack – shared with numerous other models including the Zf – which is good for

▼ Dual memory card slots are both for SD devices and have UHS-II and Video 90 speed support.



▲ Dedicated buttons for setting ISO and exposure compensation are conveniently located close to the shutter release.

▲ Main mode dial is a substantial control with three positions for saving camera user set-ups (U1, U2 and U3).

▲ Dedicated button gives direct access to the 'Picture Control' profiles and enables quick switching in the field.

around 380 shots (using the EVF). Extended shooting is possible by fitting either the MB-N11 or the newer MB-N14 battery grips which each accommodate two EN-EL15c packs. Notably, the MB-N14 allows for recharging via its own USB C port.

SPEED AND PERFORMANCE

Loaded with a Wise 128 GB SDXC UHS-II/V90 memory card and using the focal plane shutter with the Continuous High Extended mode, the Z5II captured a burst of 199 JPEG/large/fine frames in 14.256 seconds which represents a continuous shooting speed of 13.95 fps. That's as close to the quoted 14 fps as makes no difference. These files averaged around 13 MB in size. Using the sensor shutter and the 'C30' setting, a sequence of 652 normal-quality JPEGs was snapped off in 21.596 seconds which equates to a speed of 30.19 fps. The average file size here was in the order 6.58 MB.

We tested the Z5II with the Nikkor Z 24-50mm f/4.0-6.3 standard zoom which is a very handy little lens and the slower speed not really an issue given how well the camera performs at high ISO settings. As we noted with the Zf – which has the same sensor and processor duo – the autofocusing greatly benefits from the faster number-crunching which, compared to the previous model, delivers much-improved responsiveness and significantly more reliable tracking. This also comes with the updated control algorithms from the Zf so, in particular, smaller subjects – such as a distant person or animal – are detected more quickly and then the tracking will stay locked-on even with quite erratic movement such as changes of direction or speed. In situations where an eye is no longer visible, the system progressively switched to face, head or body detection in order to stay locked on the subject. Additionally, the '3D Tracking AF' works very effectively when shooting subjects that aren't covered by the recognition categories. Not surprisingly given the system's extended sensitivity, the performance low light or low contrast situations is exceptional, maintaining fast initial subject acquisition and then extremely reliable tracking subsequently.

> THE 'EXPEED 7' PROCESSOR NOT ONLY DELIVERS MORE SPEED, BUT ALSO IMPROVEMENTS TO IMAGE QUALITY, INCLUDING THE NOISE REDUCTION PROCESSING AND THE COLOUR REPRODUCTION."

As it does in the higher-end full frame Z cameras, the 'EXPEED 7' processor not only delivers more speed, but also improvements to image quality, including the noise reduction processing and the colour reproduction. Nikon is definitely on a par with Fujifilm when it comes to the sophistication of its colour science which balances realism with a pleasing rendering of both saturation and contrast. And there's now a growing choice of both filmic and cinematic looks to play with.

The out-of-the-camera JPEGs also exhibit plenty of well-defined detailing with beautifully smooth tonal gradations and a wide dynamic range… the key benefit of the bigger pixels when you have 24.5 MP res on a full frame imager.

Additionally, the sensor employs 'dual gain' circuitry so there are two base ISO settings – set at 100 and 800 for stills – for output circuits optimised for dynamic range and colour saturation (i.e. low gain) and sensitivity (i.e. low noise). This results in inherently lower noise at the higher sensitivity settings above ISO 800. Subsequently, less noise reduction processing is required, so the image quality for JPEGs – particularly in terms of the sharpness and colour saturation – is better than would normally be the case. However, it does also mean that the IQ at 800 could well be better than that at ISO 400 – at least in terms of noise levels – which is one reason why some dual-gain sensors have a lower crossover setting at, say, ISO 500 as on the Z8. However, another plus is inc reased exposure latitude which is useful when shooting at the higher ISOs… so you can underexpose by up to around four stops to help preserve more detail in the brighter highlights and still be able to lighten the shadows without creating very much noise.

Both saturation and definition remain very good up to ISO 6400, followed by only a small reduction in the overall image quality at ISO 12,800 and even at ISO 25,600. The ISO 51,200 setting is also useable and, while detailing and saturation both start to drop off a little, the visible noise is still finely-grained. As with the Zf, the Z5II's low-light capabilities are extremely good with the 7.5-stops IBIS adding further flexibility with setting shutter speeds.

THE VERDICT

There is just so much to like about the Z5II. It handles superbly and has the classic Nikon ergonomics which just work so well in terms of being both logical and efficient. Then there's a swag of higher end features such as dual memory card slots, high-speed shooting with RAW capture (and even faster for JPEGs), pre-release buffering, an extended list of subject recognition modes for AF tracking and, for JPEG shooters, even more scope to tune the look and mood of their photographs. Better still, the camera is a real joy to use; comfortable, intuitive and engaging.

And while there are some pretty pricey Nikkor Z lenses, there's some very affordable ones too, notably the f/1.4-speed primes and the 24-200mm f/4.0-6.3 zoom, so you can build a useful system without breaking the bank.

If you're still hanging on to a beloved Nikon DSLR, this is the camera to ease you more gently into your mirrorless future… and it's much more capable than any enthusiast-level digital reflex. For anybody else in the market for a full frame model, the Nikon Z5II is unbeatable value for money.

VITAL STATISTICS

NIKON Z5II $2,699 body only, recommended retail price

Type: Enthusiast-level digital mirrorless camera with Nikon Z bayonet lens mount

Focusing: Automatic via 299 points (89 percent vertical/96 percent horizontal frame coverage) using hybrid phase/contrast detection. Area modes are Pinpoint, Single-Point, Dynamic Area AF – Small, Dynamic Area AF – Medium, Dynamic Area AF – Large, Wide Area AF Small, Wide Area AF Large, Wide Area AF – Custom 1 and 2 (with 77 shape/size options from 1x1 to 21x13 points), Auto Area, 3D Tracking and Subject Tracking. Manual or auto (AF-A) switching between one-shot and continuous modes. Body/head/face/eye detection for humans, body/head/eye detection for animals (dogs, cats and birds), subject recognition for cars, motorcycles, bicycles, trains and aircraft. Auto subject detection. Adjustable tracking sensitivity. Sensitivity range is EV -10 - 19 (ISO 100, f/1.2). AF assist provided by built-in illuminator. Low-Light AF in 'Starlight View' live view mode. AF micro-adjustment available. Manual focus assist in live view via subject detection with magnified image, magnified image (up to 16x) and/or focus peaking display (choice of colours – red, yellow, blue or white; and high, standard or low intensities).

Metering: TTL via sensor with multi-zone (Matrix metering), multi-zone with face detection, centre-weighted average (8.0mm or 12 mm centre circle), full average, spot (4.0mm/1.5%), highlight weighted and i-TTL flash. Spot metering can be linked to AF point. Metering range is EV -4.0 to 17 (f/2.0 and ISO 100).

Exposure Modes: Continuously-variable program with shift, shutter-priority auto, shutter-priority auto with auto aperture and ISO adjustment, aperture-priority auto, metered manual, i-TTL auto flash and manual flash.

Shutter: Electronically-controlled, vertical travel, focal plane type, 900-1/8000 second plus 'B' and 'T'. Flash sync up to 1/200 second. Exposure compensation up to +/-5.0 EV in 1/3 or ½ stop increments. Sensor-based shutter has a speed range of 30-1/8000 second (not usable with flash). A hybrid 'electronic first curtain' shutter also available. Shutter delay timer (0.2, 0.5, 1.0, 2.0, 3.0 seconds).

Viewfinder: 1.27 cm OLED-type EVF with 3.686 megadots resolution. Coverage = 100% vertical/horizontal. Magnification = 0.8x (50mm lens at infinity). Eyepiece strength adjustment built-in. Adjustable for brightness (18 levels) and colour temperature. 8.1 cm TFT LCD monitor with 2.1 megadots resolution, fully-articulated adjustment, and touch screen controls. Adjustable for brightness (15 levels) and colour temperature. 'Warm Display Colours' (for night vision) and 'Starlight View' (for shooting in very low light) modes. Auto/manual switching between EVF and monitor.

Flash: No built-in flash. External flash units connect via ISO 518 hotshoe.

Additional Features: Magnesium alloy bodyshell sealed against dust and moisture, auto exposure bracketing over two to nine frames (up to +/-3.0 EV adjustment per frame), AE lock, depth-of-field preview, all exposure adjustments in 1/3 or ½ stops, programmable self-timer (two to 20 seconds delay, up to nine frames at 0.5 to three seconds intervals), silent shooting mode, audible signals, wireless remote control, 87 custom functions.

DIGITAL SECTION

Sensor: 24.5 million pixels (effective) BSI CMOS with 35.9x23.9 mm area. Sensitivity equivalent to ISO 100-64,000 (extendable to ISO 50 and 204,800). Optical low-pass filter is fitted. Fluorine coating repels moisture and grease.

Focal Length Increase: None.

Formats/Resolution: Three JPEG compression settings (1:4, 1:8 and 1:16; with size or quality priority); three HEIF compression settings (1:4, 1:8 and 1:16; with size or quality priority); and lossless compressed, High Efficiency* or High Efficiency lossy compressed RAW files. Three resolution settings at 3:2 aspect ratio ('FX' format); 6048x4032, 4528x3024 and 3024x2016 pixels. Three resolution settings at 1:1 aspect ratio (24x24 mm); 4032x4032, 3024x3024 and 2016x2016 pixels. Three resolution settings at 16:9 aspect ratio (36x20 mm); 6048x3400, 4258x2544 and 3024x1696. Three resolution settings in 'DX' format (24x16 mm); 3936x2656, 2976x1992 and 1984x1328 pixels. RAW (NEF) images are captured at 6048x4032 pixels, in either 36-bit or 42-bit RGB colour; or at 6048x4032, 4528x3024 and 3024x2016 pixels with 36-bit RGB colour. RAW+JPEG/HEIF capture is possible (with all JPEG/HEIF compression levels).

Video Recording: NEV format (12-bit RAW) – 4K (FX) at 4032x2268 pixels; 30, 25 or 24 fps and 16:9 aspect ratio. 4K (DX crop) at 3984x2240 pixels; 30, 25 or 24 fps and 16:9 aspect ratio. **MOV format (H.265 HEVC codec, LongGOP compression, 8- or 10-bit 4**:2:2 colour) – 4K UHD at 3840x2160 pixels; 30, 25 or 24 fps and 16:9 aspect ratio (up to 360 Mbps). 4K UHD at 3840x2160 pixels; 60 or 50 fps and 16:9 aspect ratio with a 1.5x crop. Full HD at 1920x1080 pixels; 120, 100, 60, 50, 30, 25 or 24 fps and 16:9 aspect ratio (up to 190 Mbps). **MP4 format (MPEG 4 AVC/H.264 codec, LongGOP compression, 8-bit 4**:2:0 colour) – Full HD at 1920x1080 pixels; 120, 100, 60, 50, 30, 25 or 24 fps and 16:9 aspect ratio (up to 50 Mbps). Maximum clip duration is 125 minutes for 4K UHD at up to 60/50 fps (H.265, 8-bit colour). Maximum clip length is 125 minutes (4K UHD at up to 60/50 fps, H.265 codec and 8-bit colour). Stereo sound recording (24-bit 48 kHz PCM linear audio in MOV format) with auto/manual adjustable levels, attenuator, adjustable frequency response (wide range and vocal range) and wind noise filter. Stereo microphone input (with plug-in power) and headphone output provided (with adjustable volume).

Video Features: 'Hi-Res Zoom' (up to 2.0x in Full HD, using 4K res), proxy recording with N-RAW, N-Log gamma profile with RED LUT processing, HDR HLG profile, 'Product Review' mode, hybrid IBIS and electronic image stabilisation, time code support (with drop-frame correction), time-lapse movie mode (2K or 4K), auto flicker detection and correction, zebra patterns (choice of two with adjustable highlight threshold and mid-tone range), waveform monitor, focus peaking display, red frame recording indicator, video self-timer, video flicker reduction, video high-frequency flicker reduction, 'ISO Fine Tune' provides 1/6-stop adjustment increments, video recording display zoom (50, 100 or 200 percent).

HDMI Output: 4K UHD 16:9 with 8/10-bit 4:2:2 colour and 60, 50, 30, 25 or 24 fps. Full HD 16:9 with 8/10-bit 4:2:2 colour and 60, 50, 30, 25 or 24 fps. N-Log or HLG with 10-bit 4:2:2 colour.

Recording Media: Two memory card slots for SD/SDHC/SDXC devices with UHS-II and V90 speed support. Back-up, overflow and assign file type management options.

Continuous Shooting: Up to 120 frames at 30 fps in JPEG/large/normal quality using the sensor-based shutter, with full AF adjustment, but AE locked to first frame. 'Pre-Release Capture' in the C30 (30 fps) and C15 (15 fps) modes at 0.3, 0.5 or 1.0 second with 'Post-Release Burst' at 1.0, 2.0, 3.0 seconds or MAX. Up to 200 frames at 14 fps with JPEG/large/fine quality using the focal plane shutter in 'Continuous High Extended' mode with full AF/AE adjustment. Up to 200 frames at 11 fps in RAW quality using the focal plane shutter, with full AF/AE adjustment. 'Continuous High' shooting at 10 fps. Low speed continuous shooting can be set between 1.0 and 7.0 fps.

White Balance: Auto/manual control with 'Natural Light Auto', seven presets and six custom settings. White balance fine-tuning available for AWB and all presets plus manual colour temperature setting (2500-10,000 degrees Kelvin, in ten degree increments or mired units) and white balance bracketing (up to nine frames). Three auto correction settings – Auto 0 'Keep White' reduces warmer hues under artificial lighting. Auto 1 'Normal' balances subject colour and ambient lighting. Auto 2 'Keep Warm Lighting Colours' maintains warmer hues under incandescent lighting.

Interfaces: USB Type C (3.2), HDMI Type D, 3.5mm stereo audio input, 3.5mm stereo audio output and wired remote trigger connection.

Additional Digital Features: Sensor-shift image 'VR' stabilisation with five-axis movement and up to 7.5 stops of correction for camera shake, 'Focus Point' VR stabilisation, 'Pixel Shift Shooting' (four, eight, 16 or 32 shots with RAW capture, up to 96 megapixels, tripod mode only), sensor cleaning, 'Active D-Lighting' contrast control (Auto, Low, Normal, High, Extra High), auto bracketing functions (AE, Flash, AE+Flash, WB or ADL), focus shift shooting (up to 300 frames), 11 'Picture Control' presets (Auto, Standard, Neutral, Vivid, Monochrome, Flat Monochrome, Deep Tone Monochrome, Portrait, Rich Tone Portrait, Landscape and Flat), three 'Picture Control HDG' presets (Standard, Monochrome, Flat), 20 'Creative Picture Controls' (Dream, Morning, Pop, Sunday, Sombre, Dramatic, Silent, Bleached, Melancholic, Pure, Denim, Toy, Sepia, Blue, Red, Pink, Charcoal, Graphite, Binary and Carbon), ten effect levels for 'Creative Picture Controls', adjustable 'Picture Control' parameters (Sharpening, Mid-Range Sharpening, Clarity, Contrast, Brightness, Saturation and Hue), with 'Quick Sharp' adjustment (for Sharpening, Mid-Range Sharpening and Clarity), B&W filters and toning effects, nine user-defined 'Picture Control' modes, 'Cloud Picture Control', 'Skin Softening' processing (Low, Normal, High), 'Portrait Impression Balance' (Mode 1, Mode 2, Mode 3), multiple exposure facility (up to ten frames with Add, Average, Lighten or Darken exposure adjustment), intervalometer (up 9999 shots with exposure smoothing and silent mode), HDR dual-shot capture (Smoothing –High/Normal/Low; Exposure Difference Auto or 1.0/2.0/3.0 EV), auto bracketing functions (AE, flash, AE and flash, white balance and ADL), sRGB and Adobe RGB colour spaces, auto flicker detection and correction, high-frequency flicker correction, long exposure noise reduction (Off, On), high ISO noise reduction (Off, Low, Normal, High), guide grids (3x3, 4x4, 1:1 and 16:9), real-time histogram, dual-axis level indicator (two display types), auto ISO with auto minimum shutter speed control, in-camera lens corrections (distortion, diffraction and vignetting), image comments input (up to 36 characters), voice memo recording, copyright information, IPTC data, auto image orientation, adjustable image display time, slide show, 4/9/72 thumbnail displays, histogram displays (brightness and/or RGB channels), highlight alert, playback zoom (up to 32x), in-camera editing functions (Trim, Resize, D-Lighting, Straighten, Distortion Control, Perspective Control, Monochrome, Image Overlay, Lighten, Darken, Motion Blend and RAW Processing), WiFi connectivity (2.4 and 5.0 GHz bands), Bluetooth 5.0 LE connectivity (via Nikon SnapBridge app).

Power: One 7.0 volt, 1900 mAh rechargeable lithium-ion battery pack (EN-EL15c type) with in-camera charging via USB C (PD). Optional MB-N11 or MB-N14 battery grips can be fitted.

Dimensions (WxHxD): 134.0x100.5x72.0 mm body only.

Weight: 620 grams body (only without battery pack or memory card).

Price: $2699 body only. $3249 with the Nikkor Z 24-50mm f/4.0-6.3 standard zoom lens. Nikon products purchased from an authorised Nikon Australia reseller are covered by a two-year warranty. For more information visit www.nikon.com.au

Distributor: Nikon Australia Pty Ltd, telephone 1300 366 499 or visit www.mynikonlife.com.au

Photo: Ian van der Wolde

THAT "PHOTOGRAPH" YOU'RE SO PROUD OF IS JUST ANOTHER COMPUTER FILE UNTIL YOU CAN HANG IT ON A WALL.

A photo only becomes a photograph when you can touch it, feel it, and frame it. For that, all you need is time, technique, taste and a paper that make the most of what you've made.

If you're proud of your work, **print it.**

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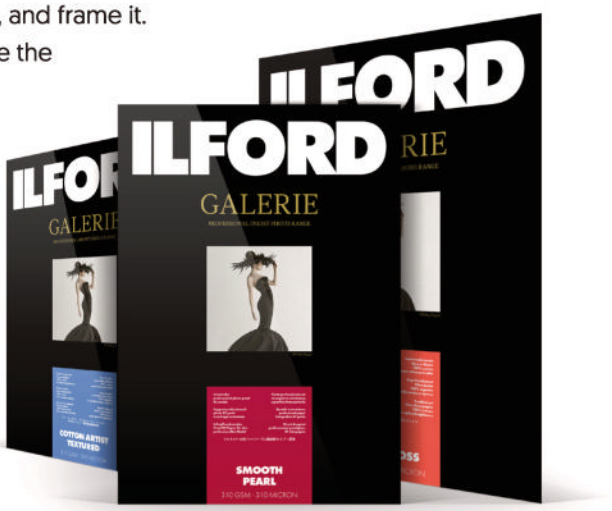
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COTTON ARTIST TEXTURED

REPORT BY **PAUL BURROWS**

NIKKOR
Z 35mm f/1.2 S

NIKKOR Z 35mm 1:1.2 S ⌀82
NIKKOR 35/1.2 S
NIKKOR S
A M

◀ The f/1.2-speed S-Line 35mm joins Nikon's existing super-fast 50mm and 85mm primes and all three are similar in dimensions and their basic control layouts.

BRIGHT STAR

Nikon's fastest Z mount 35mm prime wide-angle comes at a price and is a big lens too, but its optical performance makes it worth both the effort and the investment.

Every photographer has an opinion about the ideal wide-angle lens. For some, it's the so-called 'cinematic focal length' of 28mm which is similar to how we see the world when looking around, but many consider 35mm to offer the best combination of a wider view and an overall versatility in many shooting situations. This undoubtedly one reason why, along with 50mm and 135mm, 35mm is one of the classic prime focal lengths. Even with so many wide-angle zooms offering potentially more flexibility – including the popular 24-70mm – the 35mm prime lens remains a firm favourite. Nikon now offers Z mount users a choice of three of them with maximum apertures of f/1.8, f/1.4 or now a super-fast f/1.2. This joins the existing 50mm and 85mm f/1.2-speed primes in the Z mount lens system, and all are S-Line models which means a higher quality of construction, both physically and optically to the benefit of precision and performance.

The 35mm f/1.8 is also an S-Line lens, but interestingly the f/1.4 model isn't so the difference that the half-a-stop to f/1.2 makes is quite dramatic. By any measure, the Nikkor Z 35mm f/1.4 is exceptional value for money and, what's more, it's essentially a quarter of the cost of the f/1.2 S lens. It's also close to a third of the latter's weight and around half its length so it's significantly more compact too. So, if you're a Z mount shooter and you're thinking about a fast 35mm prime, the f/1.2 S lens is going to have to work pretty hard to convince you that the f/1.4 isn't the one for you (leaving more than enough change to add something else tasty to your kit).

Even sucking in only half-a-stop more light means that the f/1.2 lens has to be much bigger – especially the diameter – but the fastest Nikkor Z 35mm is definitely quite a handful, weighing in at over a kilo. However, there's no question it has a premium feel, and the fit and finish is on a par with anything from Germany or Sigma's premium Art series lenses. There is, in fact, a 35mm f/1.2 DG Art lens with pretty similar dimensions so the Nikon lens is in the ballpark when it comes to size and weight (but the Sigma isn't available in the Z mount, although for the record, it's quite a bit cheaper).

The construction employs mostly high-grade polycarbonate barrel tubes and is fully weather-sealed to protect against dust and moisture, including a gasket around the mount. Curiously though, this lens doesn't have an easy-to-clean fluorine coating on the front element which is something you'd expect at this price point. Consequently, you'd have to consider fitting a protective filter in which case you'll need an 82 millimetres diameter fitting which won't be cheap either, but definitely worth it.

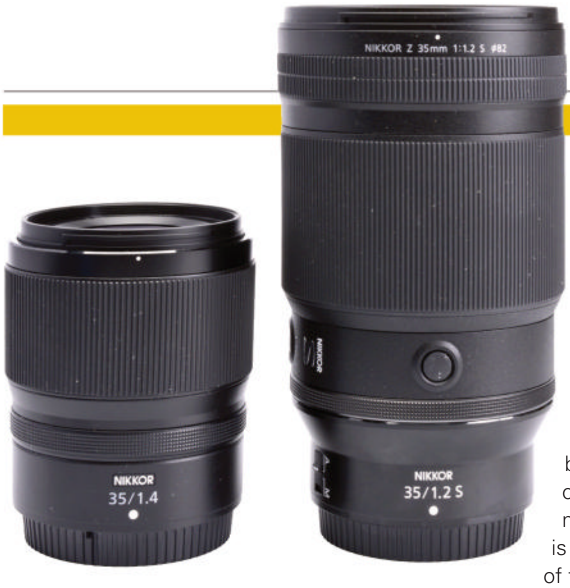
OPTICAL DESIGN

There's a total of 17 elements at work inside the Nikkor Z 35mm f/1.2 S, arranged in 15 groups and including a total of seven special types. These comprise three with extra-low dispersion (ED) characteristics and three with aspherical surfaces along with one which is both ED glass and also aspherically shaped.

The aspherical elements are designed to correct for distortion as well as spherical aberrations and coma. They also contribute to more uniform sharpness and brightness across the frame. The ED glass elements correct for chromatic aberrations – by ensuring that the different coloured wavelengths of light are refracted at close to the same angle – which also enhances sharpness. Additionally, the lens relays a profile to the camera body which drives automatic corrects for distortion and chromatic aberrations as well as vignetting and diffraction when shooting JPEGs (and also HEIFs).

A concoction of three Nikon multi-coating technologies are used to minimise internal reflections – namely, 'Meso-Amorphous Coat', 'Nano Crystal Coat' and 'ARNEO Coat' – which have the potential to be problematic with such a complex optical design with a very bright maximum aperture. The effective suppression of flare and ghosting benefits both the contrast and colour when shooting in side lighting or even with the sun near the edges of the frame.

As with the other f/1.2-speed Z mount primes, focusing is performed internally



▲ What a difference half a stop of lens speed makes. The f/1.2 lens towers over the Nikkor Z 35mm f/1.4. There's a big difference in the prices too, but the faster lens is a superior performer in every department.

using a pair of stepping motors which uses pulses to drive dual focusing groups. This makes for better responsiveness and faster adjustments. As it's all done internally, there's no change to the lens's physical length and the front element doesn't rotate. The pulsed drive also ensures that the autofocusing is very quiet. The minimum focusing distance is 30 centimetres which gives a maximum reproduction ratio of 1:5 or one-fifth life size.

Today's mirrorless lenses are generally also designed for video-makers as well as photography as is the case with the Z mount 35mm f/1.2 so some effort has gone into an optical design that effectively eliminates focus 'breathing'. This is when the image size changes slightly during focusing and which isn't really an issue when shooting stills, but can be noticeable in video footage. Tellingly, the f/1.2 S lens is exemplary in this regard, but the f/1.4 model not so much which is very much down to the precision of the former's mechanisms.

IN THE HAND

As already noted, this is a big and heavy lens, but it feels well-balanced even on the more compact Zf body so it will be right at home on the bigger Z8 or Z9. The focusing is collar is quite deep so it's comfortable to grip and, despite being electronic 'fly-by-wire' in its operation, is nicely weighted. In the Z camera's 'Controls' custom submenu, the adjustment can be switched between non-linear or linear With non-linear adjustment, the amount of focus shift is governed by the rotation speed of the focus collar… in other words, if you turn it quickly, you'll make big adjustments, but turning it slowly allows for more precise control thanks to the smaller degrees of change. With the linear-type adjustment, the focus is shifted at a constant speed according to the rotational angle of the focus ring which can be set between 90 and 720 degrees or to 'Max'. The latter allows for more uniformity of adjustment – i.e. more linear – which is something video-makers often require when using focusing creatively. The direction of rotation can also be switched if desired. When autofocusing, you can set this control to serve as a full-time manual focus override or switch it to another function from a fairly extensive list of items (over 40 on the Zf, for example).

The 35mm f/1.2 S now has two 'L-Fn' buttons – set at 90 degrees apart which makes things much easier when shooting in the vertical framing – which, as a default, serve as the focus hold buttons. However, again from the camera's 'Controls' submenu, they can be assigned to virtually anything you want (again, the list runs to over 40 functions). Logically, of course, both buttons will do the same thing.

Also customisable is the lens's multi-function control ring which, on this model, is located closest to the lens mount which feels right when it's operating as the manual aperture collar. The diaphragm itself has 11 blades and the minimum aperture is f/16. Adjustment is stepless which is a plus for video shooters who want to make small exposure variations which will hardly be noticeable on screen. The alternative functions for this control ring are exposure compensation or ISO settings. Finally, switching between AF and MF operations can be done on the lens which is much quicker than having to dig the camera's extensive 'Photo Shooting Menu'.

IN THE FIELD

While the Z 35mm f/1.2 looks like it might be a bit of a chore to carry around for any period of time, the reality is that it isn't, at least not on the mid-sized Zf. The focal length proves its inherent versatility when shooting landscapes, street scenes, architecture, people and even portraits.

The very shallow depth-of-field at f/1.2 gives plenty of scope for playing with selective focusing, ensuring that subjects are very well separated from backgrounds. Consequently, very short pull focus sequences when shooting video can still be very effective at shifting the viewer's attention to what you want them to see… which is where the linear-type adjustment really comes into its own. With stills, the focusing needs to be very precise so it's a case of doing it manually or use one of the

> EVEN AT F/1.2 THE UNIFORMITY OF SHARPNESS FROM CENTRE TO CORNER IS TRULY IMPRESSIVE, LIKEWISE THE BRIGHTNESS SO THERE'S NO NOTICEABLE VIGNETTING EITHER."

NIKKOR
S
L-Fn
NIKKOR
35/1.2S

▲ The 35mm f/1.2 S gets an extra multi-function 'L-Fn' button mounted on the top of the barrel so it's easy to reach when shooting vertically.

NIKKOR
35/1.2S

▲ Weather protection measures include a rubber gasket around the lens mount.

NIKKOR
S
L-Fn

▲ Secondary multi-function control ring works well as a manual aperture collar, but can also be switched to set exposure compensation or ISO values.

▲ Test pictures taken handheld with the Nikkor Z 35mm f/1.2 S used on the Nikon Zf camera body. JPEG/large/fine files captured in the shutter-priority auto mode with the Vivid 'Picture Control' profile and ISO 200, 400 or 800 sensitivity settings. Sharpness across the frame is superlative even when shooting at f/1.2, as is the overall brightness. There's negligible distortion – even with in-camera correction turned off – and the correction for chromatic aberrations virtually eliminates any colour fringing. Both flare and ghosting are very effectively suppressed in all lighting situations.

▲ Nikon employs a total three anti-reflection multi-coatings to very effectively suppress both ghosting and flare.

NIKKOR Z 35mm 1:1.2 S ⌀82

▲ Barrel construction is mostly high-grade polycarbonate.

▲ Screwthead filter fitting is 82 millimetres and, at the very least, you'll need a protective filter. Front element doesn't have a fluorine coating to help repel moisture and grease.

> THERE'S NO QUESTION IT HAS A PREMIUM FEEL, AND THE FIT AND FINISH IS ON A PAR WITH ANYTHING FROM GERMANY OR SIGMA'S PREMIUM ART SERIES LENSES."

AF system's smallest area modes such as 'Pinpoint AF' or 'Single-Point AF'.

Thanks to the 11-blade diaphragm, the out-of-focus effects are nicely smooth and even a very cluttered background can be rendered down to just tones and vague shapes which works particularly well with, for example, portraiture. Additionally, the transition from in-focus to out-of-focus looks very natural, giving an enhanced sense of depth in an image.

What can be achieved creatively with selective focusing certainly adds to the versatility of this lens, and you'll surprised just how much you can do if you decide to venture out with just the 35mm f/1.2 S on the camera. Of course, the wider apertures are also handy when shooting in low light, enabling you to keep using lower ISO settings and/or faster shutter speeds for longer… both to the benefit of overall image sharpness. This lens doesn't have optical image stabilisation, but all the full frame Nikon Z bodies have sensor-shift correction for camera shake which further extends the low-light capabilities of the 35mm f/1.2 S and the flexibility you have with exposure settings.

PERFORMANCE

Often very fast lenses look promising on paper, especially in terms of the image quality when shooting wide-open, but the practice can leave you wondering why you didn't save some money and buy the slower model. The let-down is usually the lack of corner sharpness when shooting at the fastest aperture, but here the Nikon lens reveals what you're paying for… even at f/1.2 the uniformity of sharpness from centre to corner is truly impressive, likewise the brightness so there's no noticeable vignetting either. Both definition and contrast hold up well right into the corners. This is quite an achievement in optical design terms and it makes the Z mount 35mm f/1.2 something special.

The corners sharpen up a little more at f/1.4 (which, remember, is only half a stop slower) or at f/1.8 so this lens a true fast-aperture performer… you can shoot wide-open without compromising either overall sharpness or the other key aspects of lens image quality. There's virtually no lateral (a.k.a. transverse) or longitudinal (axial) chromatic aberrations to speak of which, again, is quite an achievement as the latter, in particular, can be quite problematic with very fast lenses, especially at the edges of the frame.

Distortion is minimal with just the slightest hint of barrel-type bending which, frankly, you're unlikely to notice in an image, but is eliminated anyway by a Z mount camera's 'Auto Distortion Control' (which is linked to the specific lens attached).

As already observed, both ghosting and flare are very well suppressed even with the sun peaking into the frame. Autofocusing operation with the Zf was fast and reliable, including when tracking subjects which were moving erratically (cue a very small and excitable puppy).

THE VERDICT

Does the Nikkor Z 35mm f/1.2 S justify its fairly hefty price tag? In terms of the optical performance at the fastest apertures, it emphatically does… there just aren't the issues with corner sharpness, vignetting or chromatic aberrations that are often the case even some other so-called high-performance fast primes. Consequently, you can explore all the creative possibilities of shooting at f/1.2 – chiefly selective focusing – without any compromises to image quality. This is a big plus for both photographers and video-makers, and puts the Nikon lens in an elite class. And, as much as we admire the 35mm f/1.4 model – still unbeatable for sheer value – it can't touch the f/1.2 S-Line for an all-round superlative performance at any aperture and any focusing distance.

Yep, it's big and it's heavy as well as being pretty pricey, but it's also a lot of lens for the money and, if you're a technical perfectionist, the obvious choice regardless.

VITAL STATISTICS

NIKKOR Z 35mm f/1.2 S

$4,899

Format: Full frame.
Angle-of-View: 63 degrees (diagonal on full frame).
Construction: 17 elements/15 groups. Seven special elements – three with extra-low dispersion (ED) characteristics, one aspherical type with extra-low dispersion (ED) characteristics, and three aspherical types.
Minimum Focus: 30 centimetres.
Maximum Reproduction Ratio: 1:5.0.
Aperture Range: f/1.2 to f/16.
Overall Length: 150 millimetres.
Maximum Diameter: 90 millimetres.
Filter Diameter: 82 millimetres.
Weight: 1060 grams (without the lens hood).
Lens Mount(s): Nikkor Z.
Features: Weather-sealed external construction; 'Meso-Amorphous Coat', 'Nano Crystal Coat' and 'ARNEO Coat' anti-reflection multi-coatings; two stepping motors (STM) AF drive (with internal focusing using dual focusing groups), 11-blade diaphragm, manual focus collar switchable between linear and non-linear operation, multi-function control ring, AF/MF switch, two 'L-Fn' focus hold/multi-function buttons. Bayonet-fit lens hood supplied. Carry pouch supplied.
Price: $4899. Nikon products purchased from an authorised Nikon Australia reseller are covered by a two year warranty.
Distributor: Nikon Australia, telephone 1300 366 499 or visit www.nikon.com.au

Nikon
NIKKOR
Z
Z 24-70mm 1:4 S ø72

MAKE IT BETTER

Why We Have The Nikon Z6III

Ever wondered what's involved in developing a new camera? Nikon allowed us to grill the design team behind the Z6III to find out more. Obviously some specific details are confidential, but we were still given some insights into time lines, decision-making, motivations and the value of user feedback.

Report by Paul Burrows.

Take a long, hard look at your camera. Regardless of the brand, a lot of time and effort has gone into its creation. From the original conception through to the design, engineering, tooling and manufacturing; a great many people and processes have been involved in getting that camera into your hands. A huge amount of money is invested in research facilities, test labs and production equipment to make everything from individual parts to printed circuit boards. I've now visited many camera factories – including Nikon's plant at Sendai back when it was making DSLRs – and I'm always amazed at how it all comes together so smoothly and efficiently given the considerable complexities of every stage.

Nikon now builds all its Z series mirrorless camera bodies at a state-of-the-art factory in Thailand, but still makes its many of its lenses and other optical equipment in Japan, currently investing a massive 100 billion Yen between now and 2030 in extensively upgraded facilities (that's around A$1.0 billion by the way).

Following the launch of the Z6III with its innovative "partially-stacked" sensor (which we comprehensively reviewed in Issue 429), Nikon Australia invited us to have a chat with the team behind its development.

Australian Camera Magazine: To open with a more general question. Typically, how long is a new camera model in development before it's ready for launch?
Nikon: While the specifics of development are confidential, we usually spend several years planning and developing a new camera.

Australian Camera Magazine: Is the time frame different for a completely new model versus an updated version, or is there just as much development work?
Nikon: The time spent on development

varies by model, but the more new development that is required, the longer it takes before the product is released.

Australian Camera Magazine: Can you outline the various stages of a new camera's development from when a concept or new is first proposed… i.e. initial design, testing of systems, prototyping, etc., etc.
Nikon: The planning and development phase of a new camera begins with identifying its target users and understanding their needs. This has been the case based on Nikon's policy of placing importance on the support we receive from our fans. We then examine whether we can satisfy the needs we've identified and then proceed with development.

Australian Camera Magazine: Turning specifically to the Nikon Z6III. What were the key drivers for deciding to develop a replacement to the Mark II model (which, of course, is already an extremely capable camera)? Such as, for example, consumer feedback or specific demands? Or what was happening with competitive models? Or technological advances in the mirrorless camera market in general?

> "The planning and development phase of a new camera begins with identifying its target users and understanding their needs."

Nikon: We received feedback from Z6II users and wanted to make improvements. We also wanted to offer a camera that would be easier to handle, yet inherit the elements that were so well received by many users of the 'EXPEED 7' generation models, including the Z9. That is the reason behind our decision to develop the Z6III.

Australian Camera Magazine: Advances in sensor and engine technologies are accelerating the evolution of video and continuous shooting performance in the mid-level camera market.

Nikon: Based on the requests from received customers over the two-and-a-half years since the Z9 was released – and in an effort to deliver best-in-class performance that allows our fans to enjoy shooting to the fullest – we also incorporated additional technological advances, including the best EVF in mirrorless-camera history and making the Z6III the world's first full-frame mirrorless camera for which a 'partially stacked' CMOS sensor has been adopted.

Our goal was to create a mid-level camera that is not merely a successor to the Z6II, but one that delivers significant advances and top-tier performance.

Australian Camera Magazine: Can you outline exactly how a 'partially stacked' sensor is designed and, then, how it works, particularly in terms of how its output data is managed as it reads out from the photosites? What are the design aspects that enable a faster read-out speed?

Nikon: Details regarding the internal structure of the image sensor are confidential, but we can tell you that high-speed processing circuits have been added to partially-stacked chips above and below the imaging area.

This makes it possible to achieve readout speeds approximately 3.5x faster than was possible with the Z6II.

Australian Camera Magazine: Will it be possible to manufacture 'partially stacked' sensors with higher resolutions or does the design limit what's possible with the imaging area and/or pixel size? And, if so, will this

> "We believe that the current continuous shooting frame rates satisfy most demands, and expect that future mid-level cameras will concentrate on practical improvements such as the prevention of missed shots."

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Z 6III
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sensor technology be used is other Z mount models?
Nikon: Technically, the image sensor can be manufactured with any number of pixels. We will continue to develop sensors based on user needs with consideration of the best balance between specs and cost.

Australian Camera Magazine: Is a 'partially stacked' sensor better than a fully-stacked design at managing the trade-off between the increased noise – and hence reduced dynamic range – that comes with a very fast data read-out?
Nikon: The faster the operation inside the sensor, the more noise tends to increase. While details are confidential, the degree of increase varies depending on sensor configuration. We cannot simply say that one is superior to the other when comparing partially-stacked and fully-stacked sensors.

Australian Camera Magazine: Is there a particular reason why the Z6III has retained a physical focal-plane shutter when the Z8 and Z9 only have sensor-based electronic shutters?
Nikon: The sensor built into the Z6III is not the same as that built into the Z9 and Z8, so rolling shutter distortion may be noticeable with some subjects and scenes. The Z6III is also equipped with a mechanical shutter for those for whom this is a concern. Incorporating a mechanical shutter also allows for a flash sync speed of 1/200 second.

Australian Camera Magazine: The benefits of the Z6III's increased shooting speeds are obvious, but is there going to be a need in the future – especially with a mid-range model like this – to deliver even faster frame rates?
Nikon: We believe that the current continuous shooting frame rates satisfy most demands, and expect that future mid-level cameras will concentrate on practical improvements such as the prevention of missed shots, which our 'Pre-Release Capture' function has achieved.

Increases in shooting speed not only enable the high-speed continuous shooting needed for effective pre-release capture, but also contribute to video recording at faster frame rates.

Australian Camera Magazine: Finally, what would your comments be to my readers who still really love their Nikon DSLRs? Is now really the time to make the switch to the mirrorless system and what are the most compelling reasons for doing this?
Nikon: One of the advantages mirrorless cameras have over DSLRs is the outstanding portability that an overall lighter system offers. In addition, mirrorless cameras allow users to preview the final image in the camera monitor or the viewfinder while shooting, even when 'Imaging Recipes' are applied.

The electronic viewfinder built into the Z6III, in particular, offers a level of performance very close to that of a real-life viewfinder, allowing users a smooth view of subject movement. This means that even those accustomed to an optical viewfinder can shoot with a visual experience very similar to that of a DSLR. The outstanding subject-detection function that recognises nine different types of subjects and the eye-detection AF – both inherited from the Z9 – make shooting more enjoyable because users can confidently leave focusing to the camera.

DISP
AF-ON
OK
MENU
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CAUTION HOT CARD

Photo credit | Macro photography by Reewaj Poudel | Reewaj works at Hobart Camera House and shot this amazing photo with a Panasonic Lumix S5IIX camera + Lumix S 100mm f/2.8 Macro IS USM lens | **Image details** f/2.8 | Shutter 1/400 | Aperture f/5.0 | ISO 640

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TASTY!

WORLD FOOD PHOTOGRAPHY AWARDS 2025 FINALISTS

▲ *Pasta Shells* by Fredrica Melania Orsini (United Kingdom), finalist in the Cream Of The Crop category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.

Now with a new name and a new title sponsor, the World Food Photography Awards originally launched back in 2011 and has steadily grown to attract many thousands of entries from all over the world. It is open to both amateur and professional photographers.

Food is, of course, a vital part of life and so it's a huge subject with many diverse aspects from production to presentation to consumption. This is reflected in the competition's many categories which include Bring Home The Harvest, Food In Action, Food For Celebration, Politics In Food, Food For Life, and Moments Of Joy. The Claire Aho Award For Women Photographers category is named after who a trail-blazing Finnish photographer. Claire Aho (1925-2015) was given her first camera at the age of ten, and she then worked as a commercial photographer from the late 1940s and at a time when almost no other women were practicing in this field.

There are also dedicated categories for wine-making which cover the people, places and products involved in this industry, along with a category for wedding food.

To see all the finalists in the 2025 competition go to **www.worldfoodphotographyawards.com/**

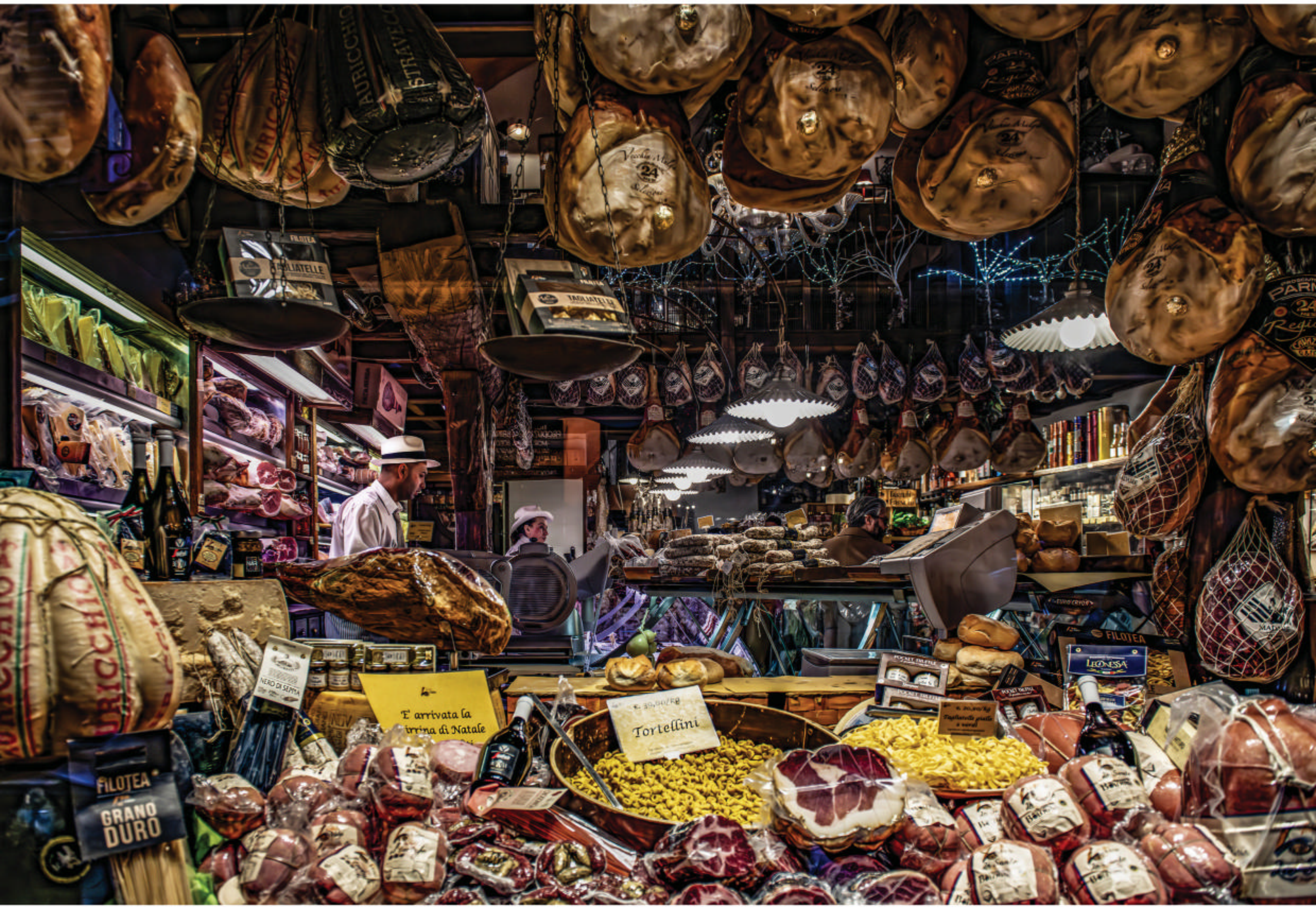
▼ *Harvest In Motion* by Wim Demessemaekers (Belgium), finalist in the Bring Home The Harvest category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.

▲ *Honey Hunters* by Muhammad Mostafigur Rahman (Bangladesh), finalist in the Bring Home The Harvest category, World Food Photography Awards 2025 sponsored by Tenderstem®Bimi® Brocollini.

◀ *Dinner At The Moulin Rouge, Paris* by Franck Tremblay (France), finalist in the Fortnum & Mason Food At The Table category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.

▼ *And It Was All Yellow* by Marina Spironetti (Italy), finalist in the Fortnum & Mason Food At The Table category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.

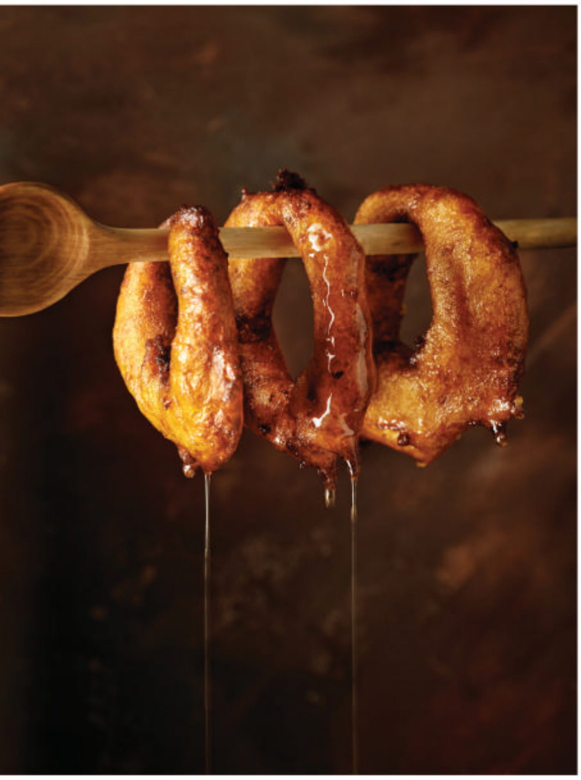
▶ *Chocolate Hot Cross Buns* by Amy Treasure (United Kingdom), finalist in the Marks & Spencer Food Portraiture category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.

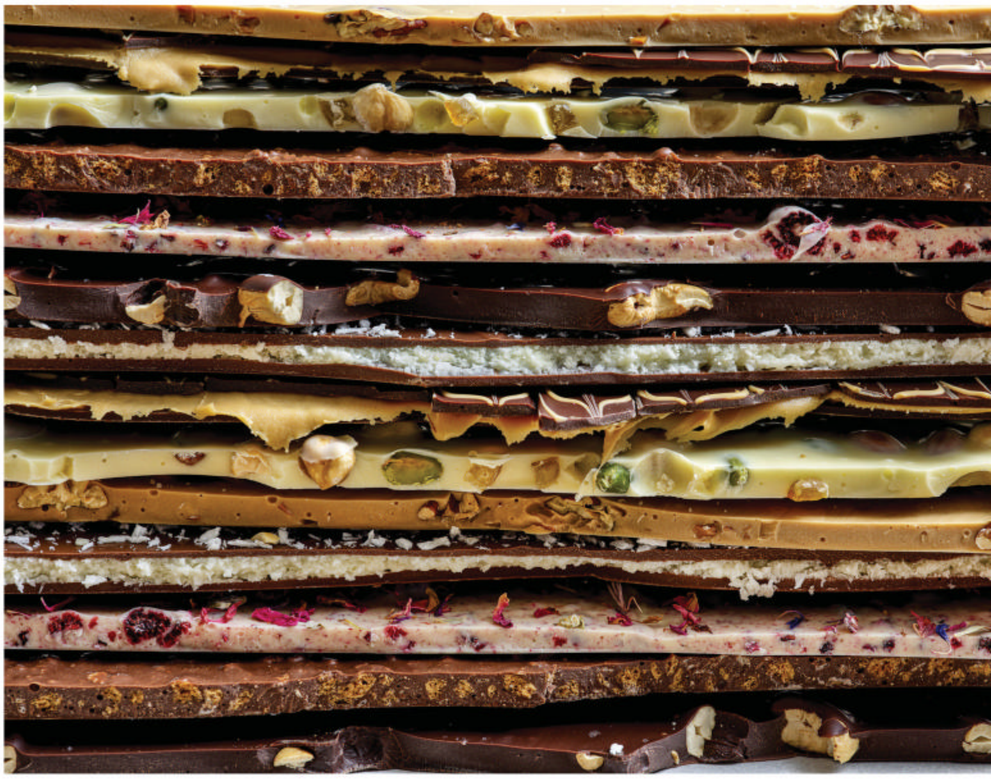


▼ *Picarones* by Jan C. Brettschneider (Germany), finalist in the Marks & Spencer Food Portraiture category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.

▲ *The Best Deli In Town* by Judith Balari (Italy), finalist in the unearthed® Food For Sale category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.

▼ *Chocolates* by Karl Bruninx (Belgium), styled by Els de Pauw, finalist in the Marks & Spencer Food Portraiture category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.





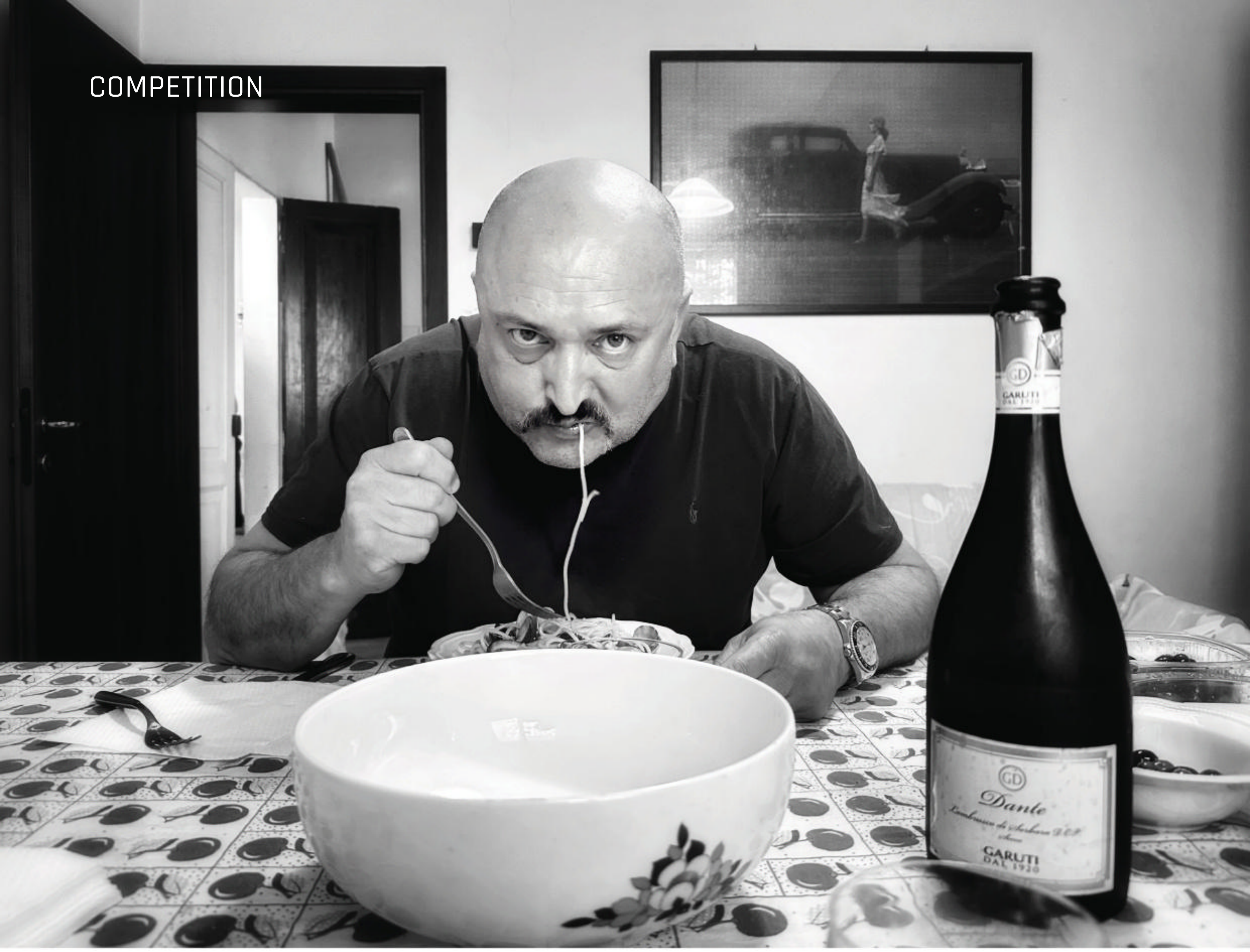
▲ *Street Food Vienna* by Florence Wibowo (Austria), finalist in the MPB Award For Innovation category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.

▼ *Quiet Time Employee Takes A Minute Before Opening Time* by Aric Backer (USA), finalist in the James Beard Foundation Photography Award category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.

▼ *Coffees* by Maja Smend (United Kingdom), styled by Bianca Nice with prop stylist Wei Tang, finalist in the World Of Drinks category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.

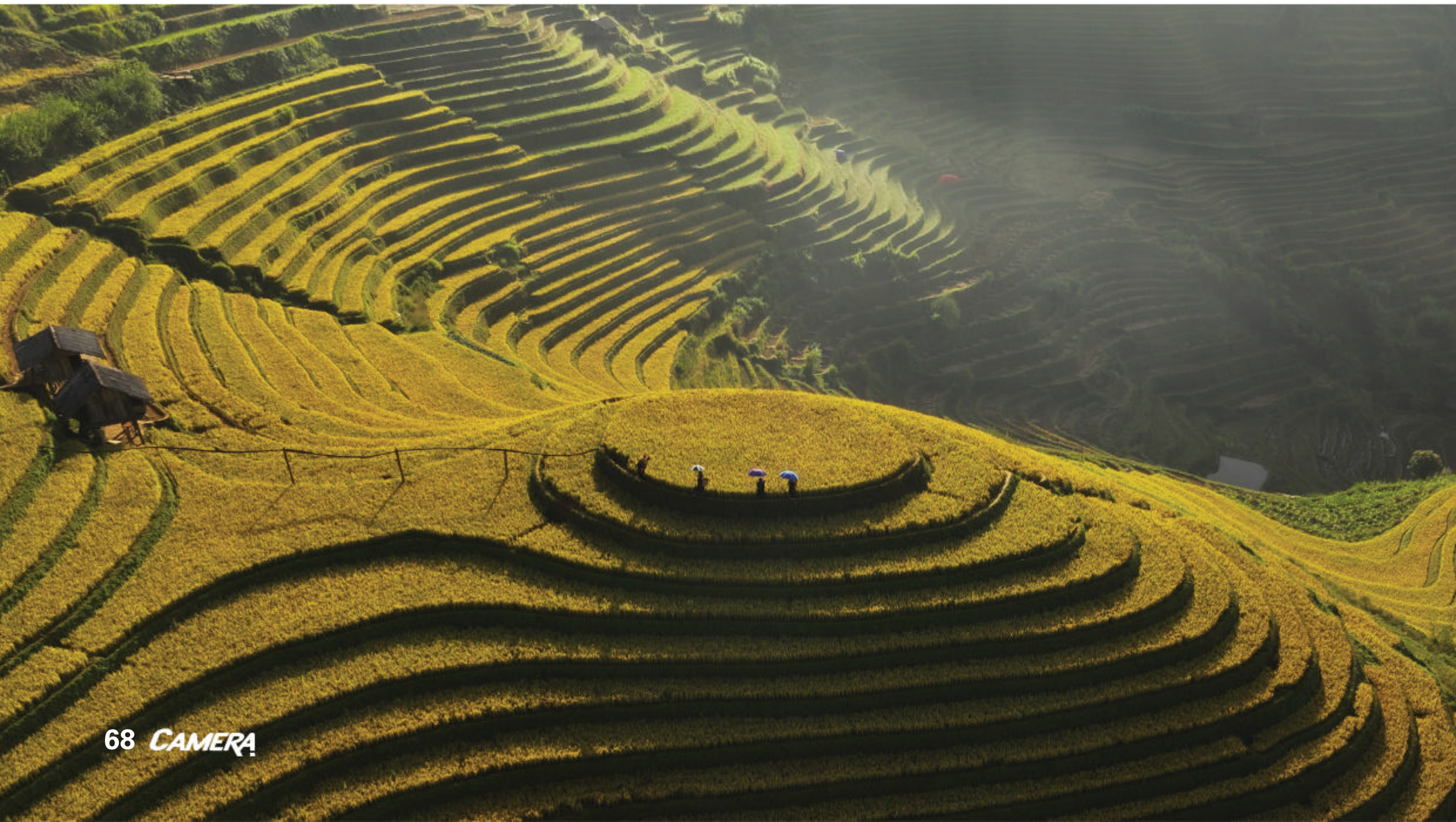
▲ *Candy Time* by Duncan de Fey (Netherlands), finalist in the World Food Programme For Life category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.

▼ *Chocolate Birthday Cake* by Steven Joyce (United Kingdom), styled by Ellie Mulligan with prop stylist Hannah Wilkinson, finalist in the Tiptree Cake Award category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.



▲ *Last Spaghetti* by Pier Luigi Dodi (Italy), finalist in the On The Phone category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.

▼ *Yellow Rice Terrace In Mucangchai* by Chim Oanh (Vietnam), finalist in the Food In The Field category, World Food Photography Awards 2025 sponsored by Tenderstem® Bimi® Brocollini.



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AF 35-150/2-2.8 FE

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MINI TEST

MICRODIA CABLE AND CHARGING ACCESSORIES FOR THE DISCERNING PHOTOGRAPHER

BY **PAUL BURROWS**

You wouldn't skimp on your photographic accessories so why cut corners when it comes to the chargers and cables that you? Microdia's products employ the latest technologies to deliver efficiency, convenience and performance… along with a splash of style and colour.

The Microdia **ExeCable Tweed PD100W** USB C to USB C PD cable is available in either 1.3 or 2.6 metre lengths. These cables also feature the reinforced triple-braided heat-resistant nylon covering, and enable high-speed data transfer at up to 480 Mbps and fast recharging at 100W.

Microdia's aptly named **Fruitywire Liquid Silicon** range of USB C to USB C cables is available in 1.3 or 2.6 metres and a variety of funky colours such as Lavender which is shown here. The coverings are a food-grade, non-toxic, eco-friendly liquid silicon for which enhances both flexibility and durability. Data transfer speed is up to 480 Mbps and charging speed up to either 60 or 100W.

Microdia's **SNAPPower Aluminaire LCD** is a magnetic wireless power bank with a 10,000 mAh capacity and 35W charging split between 15W wireless and 20W via its USB Type C PD port. The slimline casing is just 19 millimetres in thickness and the unit weighs only 133 grams which makes the Aluminaire LCD particularly suited to travel-related applications. The magnetic wireless recharging supports Apple iPhone series from 12 onwards. There is a selection of colour finishes including Purple, Rose Gold and Charcoal.

The Microdia **ExeCable Tweed PD240W** USB C to USB C PD cable is available in three colours and features reinforced triple-braided heat-resistant nylon covering for enhanced durability. They enable high-speed data transfer up to 480 Mbps and fast recharging at 240W. The USB C 'E-Mark' chip is incorporated to ensure the faster data transfer rates and higher wattage output are safely achieved at the same time. These cables are available in 1.0 or 1.8 metre lengths. MFi certification ensures compatibility and reliability with Apple devices.

The Microdia **SMARTCube GaN Pro** line-up of wall chargers (not all models shown here). From left; Nano 100W four port, Nano 65W three port, 45W dual port, 35W dual port and 30W dual port. All models are available in black or white colours. These wall chargers employ Gallium Nitride (GaN) technology to achieve faster charging speeds and a more compact, lighter weight design. GaN is a semiconductor material that allows for a higher power density, which essentially means that more power can be packed into a smaller space. A fire-retardant ABS plastic is used in the construction of the casing to ensure safe operation. Additionally, 'SmartAI' technology ensures optimal power distribution and safety, earning a swag of certifications including USB-IF, CE, FCC and RoHS.

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FUTURE

Canon AV-1 (1979)

AUTO START

As auto exposure control became a reality on 35mm SLRs, just about every manufacture tried to make it as affordable as possible, giving birth to a surprisingly long list of single-mode aperture-priority AE models.

REPORT BY PAUL BURROWS.

There are plenty of major milestones in the history of the 35mm SLR, particularly when it comes to the integration of increasingly more and more automation. Of course, there were a number of important mechanical milestones along the way, including the pentaprism-based viewfinder – which delivered a correctly-orientated image – and the instant return mirror along with automatic shutter recocking. However, it was the incorporation of built-in metering which represented the first big step towards more convenient – and potentially more accurate once the measurements were made through-the-lens (TTL) – exposure control. Once stopped-down metering – which required that the taking aperture be preset – was superseded by open-aperture measurements, the next step was to use this communication from the lens to the camera body to facilitate semi-automatic exposure control.

Asahi Pentax was the first to make the leap in 1971 with its ES model – standing for 'Electro Spotmatic' – which introduced the world to aperture-priority auto exposure control as an alternative to fully manual operation. Interestingly, Pentax achieved this while still retaining the M42 screwthread lens mount which, for obvious reasons, made direct mechanical communication with the camera body more problematic… the main reason why many manufacturers adopted bayonet mounts during the 1970s.

However, the big deal with the ES was really its electronically-controlled focal plane shutter which enabled stepless speed setting. However, providing both open-aperture metering – also for the first time on a Spotmatic series model – as well as semi-auto exposure control also necessitated a new series of lenses that, by the by, also introduced advanced seven-layered multi-coating (called 'Super-Multi Coating' or SMC for short). With aperture-priority AE, the aperture is set manually on the lens and the camera then automatically sets a shutter speed to give a 'correct' exposure (at the selected film speed setting). As an aside, there actually was an earlier model called the Electro Spotmatic, (introduced in 1970) but it was extremely temperamental and subsequently only sold in Japan. Subsequently, after the problems – mostly related to the electronics controlling the shutter speeds – were ironed out it was decided to adopt the initials 'ES' as a fresh start.

It's also worth noting at this point that shutter-priority auto exposure control had already been around since the mid-1960s with the notable pioneers being the Konica Autoreflex T and the Yashica TL Electro-X. Both were introduced in 1968 and, while there had been earlier examples, these were the first to introduce the configuration (notably, TTL metering and a focal plane shutter) which would subsequently be adopted by others including Canon. Fitted with the Servo EE Finder module, Canon's pro-level F-1 – which was introduced in 1971 – gained shutter-priority auto exposure control, again also made possible by introducing a new lens mount, designated 'FD', which facilitated auto aperture control. The EF followed in 1973 and used essentially the same body, but with a 'hybrid' electro-mechanical shutter and shutter-priority AE built-in as the viewfinder

Contax 137MD Quartz (1980)

Olympus OM-10 (1979)

Nikon EM (1979)

Pentax MV (1979)

wasn't interchangeable.

Nevertheless, professional photographers would go on mistrusting camera automation well into the 1980s – although, in 1980, Nikon still introduced the F3 with a fully electronically-timed shutter and aperture-priority auto exposure control – but it had the potential to make 35mm SLRs much more appeal to first-time users. Traditionally aimed at pros and advanced amateurs, the market for 35mm SLRs was still comparatively small so automatic exposure control was seen as a way of enticing more people to upgrade from cheaper fixed-lens cameras. After all, selling more SLR camera bodies also meant selling more lenses and more accessories such as flash units. Affordability was obviously important and it made sense to delete manual exposure control altogether to keep things simple.

New Breed

Advances in electronics – principally the microchip or microprocessor which was first used in the Canon AE-1 from 1976 – allowed for more compact designs that were cheaper to manufacture so the scene was set for a new breed of 35mm SLR which emerged in the latter years of the 1970s. The defining feature was that these cameras had a single exposure mode – mostly aperture-priority semi-auto control, but later there were some models with only fully-automatic programmed control – but they retained lens interchangeability and some models also accepted accessories such as an autowinder for motorised film advance. Just about every 35mm SLR maker at the time had one in its line-up, but most also retained a fully-manual mechanical model as an alternative for the budget-conscious buyer.

This was the case with Pentax's ME and MX which were both introduced in 1976 as a response to Olympus's super-compact OM-1 and OM-2. Obviously, the challenge was to go smaller and lighter again which was achieved with both the aperture-priority auto ME and its mechanical (i.e. manual) stable mate. Incidentally, both models still retained metal bodyshells, although plastics were starting to be more widely used in the 35mm SLR construction. The ME's electronic FP shutter had a speed range of 8-1/1000 second with one mechanical speed of 1/100 second – also the flash sync speed – plus the bulb (B) timer. If the batteries went flat mid-shoot that's all you had to work with (and obviously no metering either). With battery power, the only way to adjust exposures was via +/-2.0 EV's worth of compensation. There were the options of fitting an autowinder for 1.5 fps continuous shooting (a later version gave 2.0 fps) and a data back for imprinting the time and date on a frame. With the M series bodies also came new lens line-up called SMC Pentax-M which were also more compact and lighter weight than the original K bayonet mount models (now generally known as 'K' series lenses).

The ME set the blueprint for AP auto only 35mm SLRs so the Yashica FR II – which was launched in 1977 – had quite similar specs. However, it had a horizontal-travel cloth-curtain FP shutter versus the ME's vertical-travel metal blades, with a speed range of 4-1/1000 second. The flash sync

> "At the start of the 1980s, the auto-only 35mm SLR was big business, convincing more brands to compete in the sector, including Fujifilm, Contax and Mamiya."

Canon T50 (1983)

Yashica FX70 Quartz (1980)

Praktica BCA Electronic (1983, also sold as the Jenaflex AC-1 in some markets).

Konica FP-1 Program (1981)

speed of 1/60 second was again also the sole mechanical 'back up' speed. It used the Contax/Yashica (C/Y) bayonet mount which had been introduced in 1975 with the Contax RTS system. Cosina's CS-2 appeared in 1978 and had virtually identical specs to the FR II, but was another K mount model.

No Frills, No Worries

Many more brands jumped on the bandwagon in 1979 as Pentax replaced the popular ME with two models – the even cheaper (and simpler again) auto-only MV and the ME Super which added manual exposure control (but didn't actually arrive until 1980). However, by the middle of 1979, you could also have the Canon AV-1, the Nikon EM or the Olympus OM-10. All were significant departures for camera makers who had built their reputations on rugged higher-end pro or enthusiast-level 35mm SLRs. Nikon's EM, in particular, caused quite a stir as it was very much no-frills – there was just a backlight compensation button in place of full plus/minus adjustments – and the top and bottom panels were plastic.

Of course, the EM certainly wasn't designed for anybody who hated the idea of a cheap Nikon SLR, and it did have its plus points. The chassis was still diecast metal – the same material as the F3's – so it was actually a lot stronger than it looked, and you could fit the dedicated compact MD-E motordrive for 2.0 fps, but it was also compatible with the later, 3.2 fps MD14. And, 45 years on, the EM's size and simplicity have made arguably more popular as a classic than it was in its day.

Canon had already enjoyed huge success with the AE-1 – selling close to 1.2 million units in the first 20 months it was on sale – so it wanted to expand its A series line-up. The fully manual AT-1 was introduced in 1977 and the auto-only AV-1 in May 1979, both sharing essentially the same compact bodyshell as the hot-selling AE-1 (although the AV-1 is actually slightly smaller and lighter). In between came the multi-mode Canon A-1 (1978), the first 35mm SLR with microprocessor-controlled programmed (i.e. full auto) exposure control. The AV-1 came about primarily because aperture-priority auto was preferred to shutter-priority in a number of important markets, most notably the USA. Its electronically-controlled shutter operates over 2-1/1000 second with flash sync up to 1/60 second and, again, with only a backlight compensation button for any form of correction. Keeping the same form factor meant that the AE-1's accessories – including the Power Winder A and A2 autowinders – were compatible.

For Olympus, the OM-10 represented its first foray into the budget end of the 35mm SLR market so it was also kicked off a line of more affordable 'double digit' OM models. It has pretty much the same specs and features as the AV-1, but with the addition of depth-of-field preview which was provided on the OM system lenses. It could be fitted with the Winder 2 to give continuous shooting at 2.5 fps.

Motoring On

At the start of the 1980s, the auto-only 35mm SLR was becoming big business, convincing more brands to compete in the sector, including Fujifilm with the Fujica AX-1, Contax with the 137MD Quartz and Mamiya with the ZE Quartz. All were launched in 1980 and, in the same year, Pentax introduced an updated version of the MV called the MV1 which gained a self-timer and regained a coupling for a power winder – either the 1.5 fps Winder ME or the 2.0 fps Winder ME II. The term 'Quartz' referred to the use of an oscillating quartz crystal to provide very accurate timing with electronic shutters.

The Contax 137MD Quartz was unusual in that it was an auto-only model from what was considered a prestige brand better known for packing in the features. It also had a built-in autowinder so, straight out of the box, it was more highly automated than any of its AP-only competitors. It was also a lot more expensive too, priced at $599 with a Zeiss Planar 50mm f/1.4 lens when it went on sale in Australia. Admittedly, you got a beautifully-made, all-aluminium camera body mated with a superbly sharp standard lens, but the Canon AV-1 was selling for $299 with an f/1.8 lens, the OM-10 for the same money –again with an f/1.8 lens – and the Pentax MV for $279 with an f/2.0-speed standard lens.

Although Minolta's SRM from 1970 was the very first 35mm SLR with a motorised film transport, in 1979 Konica pioneered the built-in autowinder in a consumer-level model with its FS-1 model. Contax was an early adopter with both the 137MD and 137MA, but it took a few more years before the 'big five' brands in 35mm SLRs followed suit – for example, the Pentax A3 in 1984 and Nikon's F-301 in 1985. Incidentally, generally speaking, an autowinder only advanced the film automatically, but rewinding was still performed manually via a crank handle. A motordrive also rewound the film and this capability arrived in mainstream 35mm SLRs along with autofocusing, starting with Minolta's historic Dynax/Maxxum 7000 model in 1985.

But back to the start of the decade. Mamiya's ZE series was its last tilt at 35mm SLRs and, while it had been in the sector since the mid-1960s, it was much better known for its medium format cameras, including the mighty RB67 that was widely used by many professionals. The Z models were the first to use an electronic interface between the camera and the lens which meant, of course, a new bayonet mount which was designated 'ZE'. The new lenses were either Mamiya-Sekor E or EF series. The line began in mid-1980 with the AP-only ZE, but this was quickly followed by the ZE-2 (which added a manual exposure mode), the multi-mode ZE-X (1981) and the manual-only ZM (1982) which turned out to be Mamiya's last ever 35mm SLR. As another aside, the ZE-X was the most advanced 35mm SLR – in terms of exposure control – on the market and offered a choice of eight program lines along with a 'Crossover AE' mode which acted as both aperture-priority auto and shutter-priority auto depending on which setting you chose to adjust manually (similar to Canon's current 'Flexible Priority' mode). Furthermore, if you selected a manual value that was beyond the EV range available with the corresponding automatic settings, the crossover system simply overrode it and went for something that would deliver a good exposure.

> "Advances in electronics – principally the microchip or microprocessor – allowed for more compact designs that were cheaper to manufacture."

Eastern Promise

As the 1980s progressed, multi-mode 35mm SLRs were becoming more affordable and there were the first steps into autofocusing, but there was still a place for budget-priced models that were as simple to use as possible. Praktica – the brand born out of the East German part of Zeiss Ikon – built affordable mechanical reflex cameras with the M42 screw mount before introducing its electronic B series in 1979. Of necessity, these models also switched to a bayonet lens mount (a proprietary fitting with three contact pins) and there was subsequently a line of aperture-priority auto models, starting with the B100 Electronic in 1981 and ending with the BX10 DX in 1989.

Electronics and plastics enabled the B series – and, later, BX series – Prakticas to be a lot more compact and lighter than their heavy-metal manual cousins, and they were pretty well-made if lacking a bit of finesse in the fit and finish. Nevertheless, the B100, for example, had a metal-blade focal plane shutter with a speed range of 1-1/1000 second, +/-2.0 EV of compensation, a self-timer, an LED viewfinder display and connections for fitting an autowinder. Subsequently, the BCS (1988) lacked both the winder connections and the exposure compensation facility, and the BCC (launched later in the same year) also lacked a self-timer, making it very much a no-frills 35mm SLR. However, curiously, there was a version of the BCC with depth-of-field preview, a feature not offered on any previous AP-only model.

The restyled BX series was introduced in 1987, adding DX automatic film speed setting and TTL flash metering along with a revised shutter design with slow speeds down to 40 seconds. The auto-only BX10 DX had a very short model life with production ending less than a year after its introduction in June 1989. However, it did have exposure compensation, a self-timer and connections for the new BX Winder which delivered 3.0 fps continuous film advance.

While the Praktica name is still around, by the start of the 1990s, VEB Zeiss Ikon Jena – which had also been known as Pentacon since 1959 – was suffering the free-market economic realities that followed German unification and it finally ceased production in June 1991. The remains of the business was purchased by Schneider-Kreuznach and so the last-of-the-line Praktica BX20S actually remained in production until 2001. It's remarkable that a humble camera design which had its origins in the late 1970s was still selling in sufficient numbers to justify maintaining production over two decades later. And, by then, 35mm SLRs had reached the height of automation with advanced autofocusing, exposure metering and very fast (for film) motordrives.

For the Japanese camera makers, the autoexposure-only 35mm SLR had served its purpose by the mid-1980s as it was then possible to manufacture less expensive multi-mode models. Before this though, there were a couple of notable variations on the single mode theme with, first, the Konica FP-1 Program in 1981 and then the Canon T50 in 1983 which both had only programmed – i.e. fully automatic – exposure control. The T50 also had a built-in autowinder, but the idea of a point-and-shoot 35mm SLR reached its peak with the T80 (1985) which also had autofocusing and motorised film rewinding so it was entirely automatic in its operation (although there were various overrides, including for focusing).

The T80's AF predated the EOS system by a little under two years and used special AC series FD mount lenses – of which there were just three – with built-in focusing motors powered from the camera body. These motors and the focusing drivetrain made the AC lenses quite bulky which is obviously something Canon had resolved by the time the first EF mount lenses arrived, but the EOS system configuration was the same as that of the T80 whereas just about everybody else initially opted to drive their AF lenses from the camera bodies. However, history records that the ugly-duckling T80 didn't sell especially well and production ended after only 14 months.

Camera automation continues to become more and more sophisticated – especially now that AI-generated algorithms are at work – but it all started with exposure control; the very essence of photography. The aperture-priority-only 35mm SLRs not only kept things simple, but also made the convenience of auto exposure control more affordable for anybody who was ready to move on from a basic snapshot camera. It was a comparatively short-lived period in the evolution of interchangeable lens cameras, but a significant one nonetheless and many of these models undoubtedly started a lot of amateurs on the road to a lifelong hobby and possible even a career. It's telling that, today, the combination of simplicity and flexibility embodied in cameras such as the Nikon EM, Canon AV-1, Olympus OM-10 or the Pentax ME is still appealing for digital-era photographers getting involved in 35mm film photography for the first time.

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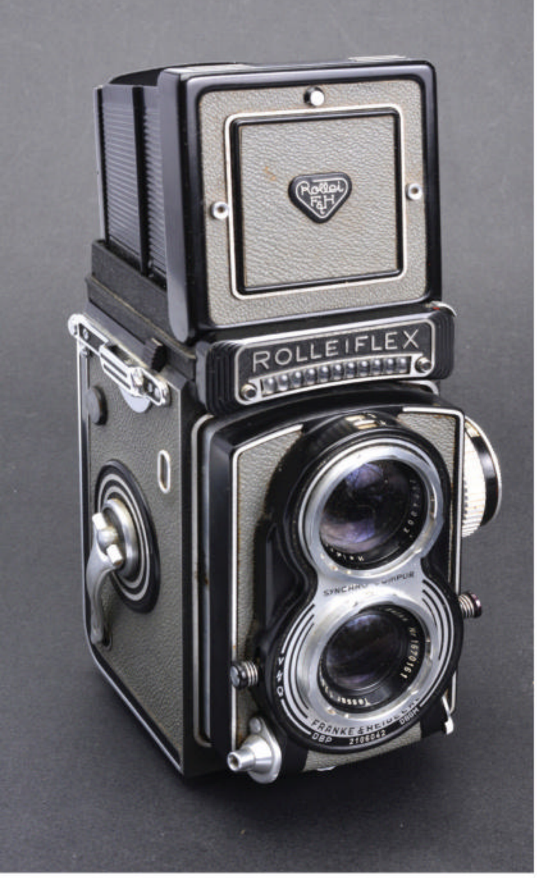


◀ Rolleiflex T1 (1958) with a built-in selenium cell light meter (which was an option on this model).

ROLLEIFLEX TLRs

These are the cameras that, in one way or another, had a significant influence on photographers and photography. The Rolleiflex was the camera of choice for both professional and amateur photographers for around 50 years.

In photography necessity has always been the mother of invention and a number of very pressing needs gave rise to the Rolleiflex twin lens reflex camera, a design that survived for 70 years.

The story begins in 1905 when a young German engineer, Reinhold Heidecke, joined Voigtländer – then a manufacturer of telescopes and binoculars – to start a new camera design department. In 1909, an 18-year-old called Paul Franke also started working at Voigtländer, as an unpaid apprentice, and this was to be the start of a long-term working relationship. Franke only stayed at Voigtländer for two years and he eventually ended up running a photography shop in Berlin where many of his customers were soldiers fighting in World War I. They continually requested a portable and easy-to-use camera comparable to the Kodak folding No.3A camera used by the American troops. Franke went to Voigtländer to see if the company had such a camera and was reacquainted with Reinhold Heidecke.

Ever the inventor, Heidecke had been working on a design specifically for use by soldiers in the trenches and had come up with what was essentially an upside-down twin lens reflex (TLR). He'd decided against a bellows-type camera like the Kodak after rats chewed through the fabric of his own example and, besides, he rightly reasoned, soldiers needed to photograph over the top of a trench without getting shot in the process. Consequently, he devised a rigid-body camera which was raised above the trench lip on a small scissors lift and had a viewfinder which was used a bit like a periscope.

Heidecke built a prototype of his 'trench camera', but Voigtländer wasn't interested in any new designs because it was selling everything it could make anyway. However, Paul Franke *was* interested in Heidecke's camera, but as it was only a concept, nothing much happened until the war ended and returning soldiers began again demanding a workable portable camera. Reinhold Heidecke reworked his rollfilm TLR – so it was operated the right-way-up – and re-presented the idea to Voigtländer who again rejected it, this time because of the cost of the new tooling (a major concern in Germany's shattered post-war economy). Heidecke decided to manufacture the camera himself and, after his application for a loan was rejected by the bank, he wrote to Paul Franke requesting his help with funding. Franke came from a wealthy family and had been successful in his business so he agreed to invest in Heidecke's new venture. In 1919, the company of Franke & Heidecke was established in the German city of Braunschweig.

Building The Legend

Germany's raging inflation further delayed the debut of Reinhold Heidecke's TLR so he instead spent his time designing a new factory which would be capable of building 20,000 cameras a year.

Production finally began in 1928 and the first model, simply called the Rolleiflex, was shown to the press on 10 December. It could be had with either an f/3.8 or an f/4.5 75mm Zeiss Tessar taking lens and accepted 117 rollfilm which was advanced via a wind-on knob and gave six 6x6cm frames. Sales started in 1929 and, by the end of the year, the company had back orders for 8000 cameras which was enough to convince the bank to loan the funds for the new factory. This commenced production in 1932 – by which time 28,000 original Rolleiflexes had been sold – and the first camera to be made at the new factory was the 4x4cm 'baby' Rolleiflex which used 127 film and had either an f/2.5 or f/3.8 60mm Tessar taking lens. However, the most important development in this year was the introduction of the Mk. II 6x6cm Rolleiflex – now known as the original Standard Rolleiflex 620 – which used 120 film to give 12 exposures on a roll. This model also introduced the lever-type film winder and had a 75mm f/4.5 Tessar lens.

In 1933, the first Rolleicord was introduced and featured stamped metal 'art deco' panels. It was designed as a budget version of the Rolleiflex and intended to counter any cheap imitations which might appear on the market. It had a Zeiss 75mm f/4.5 Triotar lens and cost less than half the price of a Rolleiflex although the art deco look wasn't a great hit with buyers so a black version, with an f/3.8 lens, appeared at the end of 1934.

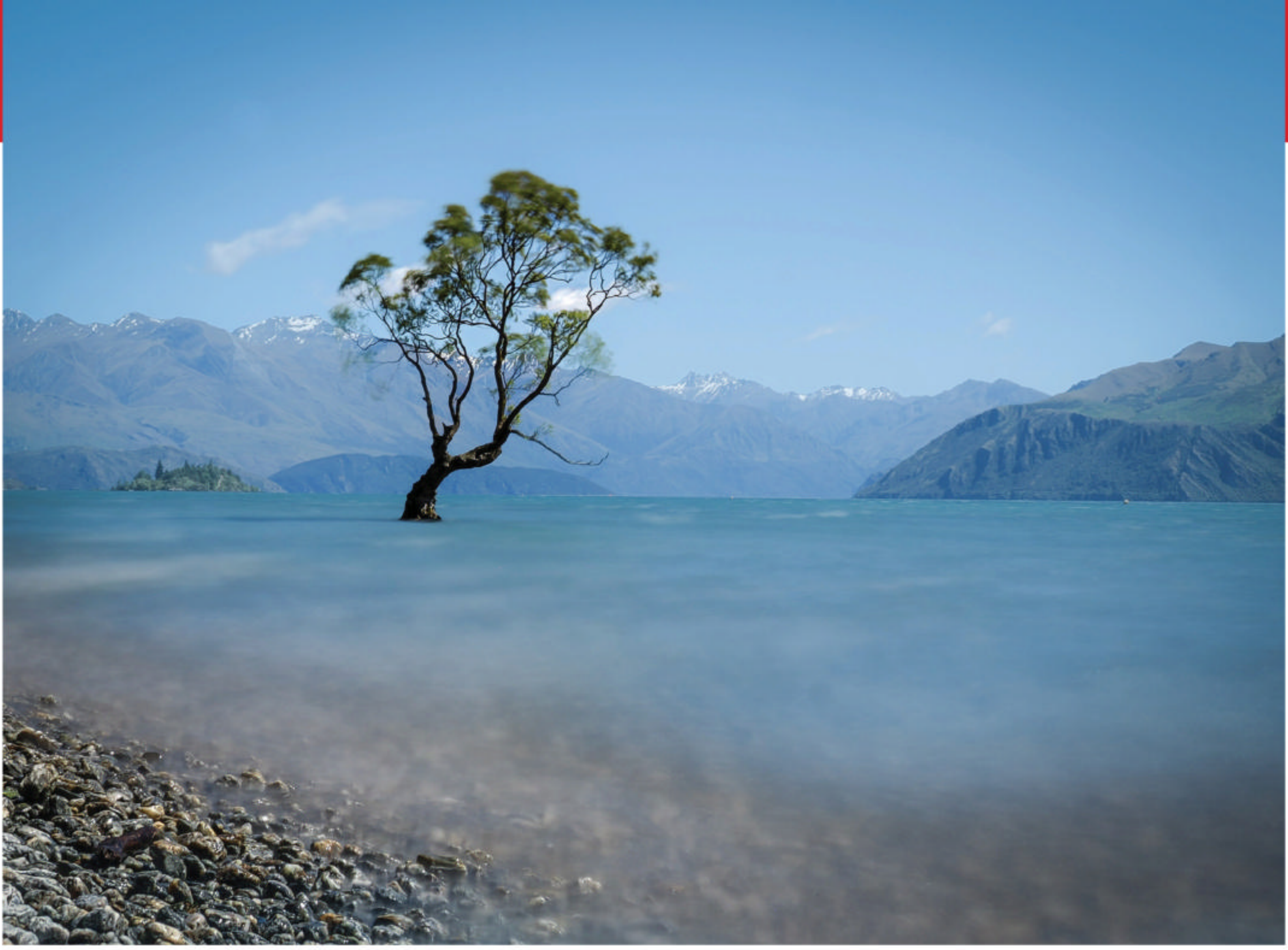
The next big development came in 1937 with the launch of the Rolleiflex Automat which provided automatic shutter recocking when the film was advanced. By 1938, 300,000 Rolleiflexes had been sold and the 400,000 milestone was reached in 1940. The Rolleiflex Automat continued in production until 1954 and was followed by the '3.5 Rolleiflexes' so named because they all have an f/3.5 taking lens. The significant models were the 3.5E which was the first Rolleiflex with a built-in selenium-type light meter (introduced in 1956) and the 3.5F (1958) which had a coupled light meter.

A parallel line of Rolleiflex 2.8 models commenced in 1949 with the 2.8A Type 1 which had an 80mm f/2.8 Tessar lens and was hurried into production primarily to complete with the Hasselblad 1600F that had been unveiled a year earlier.

The millionth Rolleiflex TLR was sold in 1956. From 1958 to 1976 Rollei marketed the T-series cameras which were 'economy' versions of the 3.5 fitted with a 75mm f/3.5 Tessar lens. A notable feature of the T cameras was switching between the 6x6cm and 4.6x6cm formats with automatic frame counter adjustment.

While many photographers equate the Rolleiflex TLR with the 1940s, 1950s and 1960s, production of some models continued well into the 1970s although, by then, demand had declined dramatically. Officially mass production of Rolleiflex TLRs ended in 1979 although orders were being filled from existing stock into the early 1980s. As Rollei subsequently lurched from one financial crisis to another, there were various limited editions and then, in 1987, production restarted with the last-of-the-line Rolleiflex 2.8GX which had a Rollei Planar HFT 80mm f/2.8 lens along with TTL centre-weighted average metering and TTL flash metering.

Despite the many updates along the way, Reinhold Heidecke's basic design changed little over all that time, an indication of just how brilliantly it was conceived originally.



2024 SIGMA SHOWCASE – GRAND PRIZE WINNER

Regular Showcase contributor (and a previous grand prize winner) **Steven Genesin** from South Australia has been judged the overall winner of the 2024 Sigma Showcase competition with his atmospheric study – which he titled *Watered* – of "That Wānaka Tree" at Lake Wānaka in New Zealand's South Island. It's probably one of the world's most photographed trees, but Steve opted for something a bit different – which appealed to the judges – using a ten-second long exposure to blur the waters of the lake, creating ethereal misty effect. Steve used an OM System/Olympus OM-1 fitted with the M.Zuiko Digital ED 12-200mm f/3.5-6.3 zoom lens.

This photograph won the fourth round of the 2024 competition and was first published in Issue 429. The composition further adds to the visual impact, creating an image you can just stare at for hours, absorbing the tranquillity.

Steve wins a Sigma lens of his choice up to the value of $1000. Congratulations!

SIGMA SHOWCASE

Tell us how you did it! When you enter the Sigma Showcase, remember to explain any tips and techniques you used to achieve the result. Also, let us know the type of camera and lens. Enter by email (see next page).

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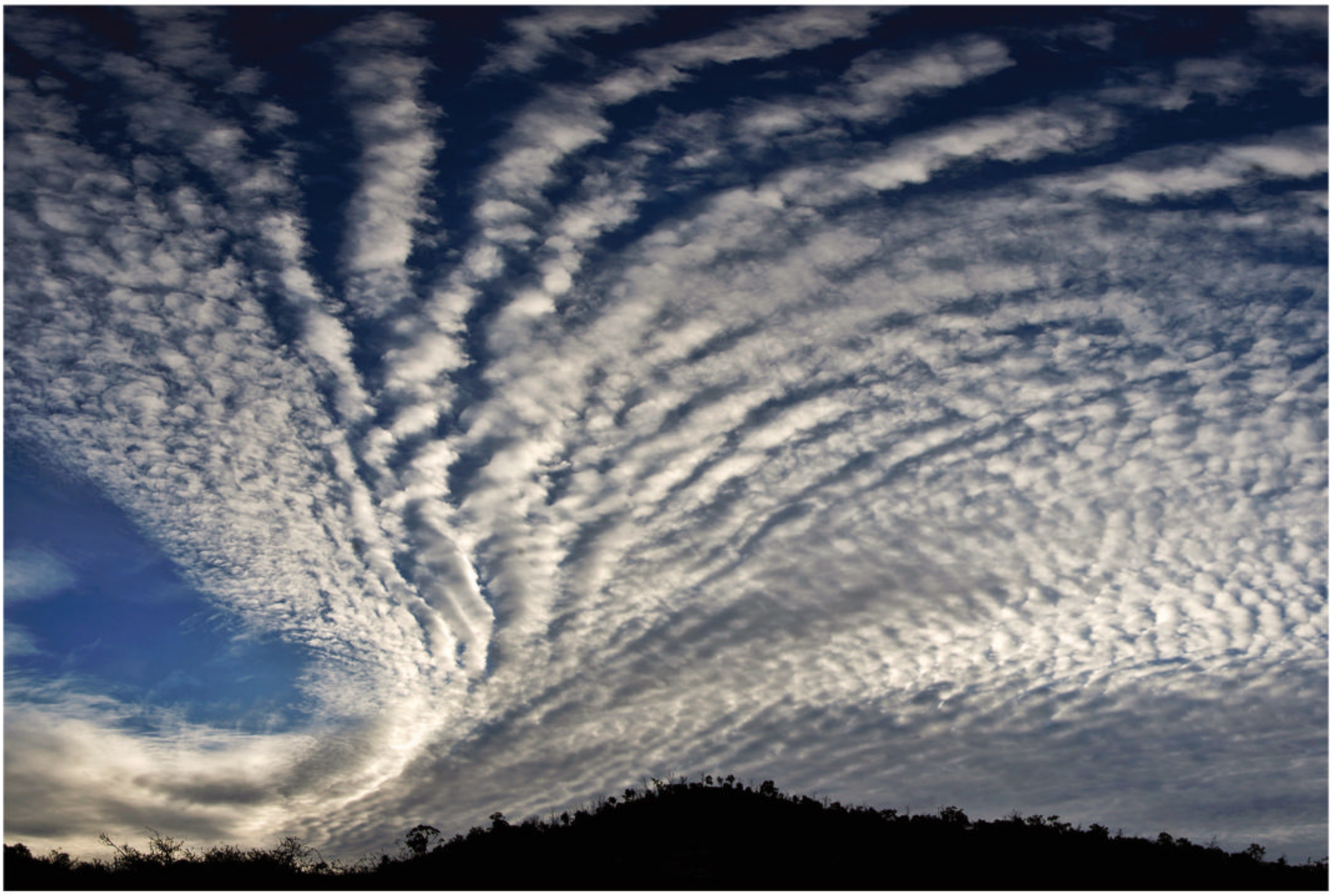

2025 SIGMA SHOWCASE FIRST ROUND WINNER

Our 2025 competition kicks off with another regular Showcase entrant and previous Grand Prize winner, **John Walker**. This image is called *Fan Clouds* and is created from ten images that John says resulted from one of those "grab the camera" moments. The result is an image that really grabs the attention with the swirl of clouds carrying the view right into the heart of it. John used a Nikon D800 DSLR fitted with a Tokina 20-35mm wide-angle zoom lens.

2025 SIGMA SHOWCASE – OPEN FOR ENTRIES

Sigma lenses is the sponsor for our Showcase competition, made possible through the generosity of the Australian distributor C.R. Kennedy & Company Pty Ltd. The grand prize for the 2025 Sigma Showcase is a Sigma lens to the value of $1000 and the winner can pick the model and the mount that they want.

Additionally, the winner of each round receives a complimentary six-issue subscription to *Australian Camera* magazine. If you already subscribe, your prize subscription will commence upon the expiry of your paid one.

You can enter the Sigma Showcase as many times as you like during the year, submitting up to four photographs each time. The entries received after the 2025 competition's new closing date of 31 December 2025 will be automatically entered in the 2026 Sigma Showcase which kicks off on 1 January 2026.

Note that it is not a requirement that entries to the Sigma Showcase be taken with a Sigma camera or lens. Read the accompanying rules carefully and get snapping.

ENTRY GUIDELINES

You can enter the Sigma Showcase by emailing your entries as attachments to camera@futurenet.com Please note that we are no longer accepting physical entries.

The requirements for submitting digital files are as follows.

- 300 dpi resolution, and at a file size which enables a reproduction of up to 20x15 cm. Please avoid submitting overly large file sizes, especially when emailing the images. Up to 2.0 MB in file size is more than sufficient.
- Digital retouching and manipulation is permitted, but the judges will continue to reward good in-camera techniques.
- Full details of the camera, lens and any retouching must be supplied with the image. Images can be titled if you wish, but this isn't essential.
- Up to four images may be permitted per entry.

What We Need To Know: We'd like to know a bit about your entries, so supplying the details below will help the judges better assess your images. Please feel free to add any other information that you feel is important.

- Title (optional)
- Camera
- Lens
- Exposure - shutter speed, aperture and ISO
- Location and/or situation
- Post camera processing (if any)
- Additional Comments
- Your mailing address

DIGITAL SLR CAMERAS BUYER'S CHECK LIST

CameraHouse

THIS CHECKLIST is designed to allow direct comparisons between different camera models, listed here in price order within each brand. The published prices are mostly supplied by the distributors as recommended retail prices (RRPs). However, some distributors no longer supply RRPs to the media, so it has become necessary to determine an 'estimated street price' derived from the range of prices for a model published by retailers. Where this has been necessary, the letter 'E' appears at the start of the entry.

A dot appearing in a column indicates that the feature is available on the camera model listed. Where a specification or product detail hasn't yet been published or confirmed, the letters TBA (to be announced) or TBC (to be confirmed) are used. If a feature is irrelevant to a particular model – such as mirror lock-up for compact system cameras – then n/a (not applicable) is used. Every effort is made to ensure accuracy; please send any corrections to **camera@futurenet.com.**

				Sensor Size			Sensor Type			File Formats			Memory Cards							Exposure Modes						Features										
	Model	**Price (Body Only Unless Noted With Asterisk *)**	**Megapixels (Effective)**	**Full-Frame**	**APS/DX**	**Four-Thirds**	**CCD**	**CMOS**	**Foveon**	**RAW**	**TIFF**	**JPEG**	**CF/XQD/CFast**	**Memory Stick**	**SD/SDHC/SDXC**	**Continuous Shooting Speed (fps)**	**Buffer Length (U=Unlimited) Max. Resolution**	**Autofocus Points**	**Metering Pixels/Zones**	**Program**	**Subject Programs**	**Aperture Priority**	**Shutter Priority**	**Manual**	**Shutter Speeds**	**Built-In Flash**	**Anti-Dust**	**FHD Video**	**4K Video**	**Anti-Shake In Body**	**Wi-Fi**	**Live View**	**Weather Proofing**	**Monitor Size (cm)**	**Weight (Body Only)**	**Review Issue**
E	Canon EOS 3000D*	$699	18		•			•		•		•			•	3	110	9	63	•	•	•	•	•	30-1/4000	•		•			•	•		6.8	436	Jul/Aug '18
E	Canon EOS 1500D*	$849	24.1		•			•		•		•			•	3	150	9	63	•	•	•	•	•	30-1/4000	•		•			•	•		7.62	475	Jul/Aug '18
E	Canon EOS 200D Mark II*	$1,249	24.1		•			•		•		•			•	5	U	9	63	•	•	•	•	•	30-1/4000	•	•	•	•		•	•		7.62	402	
E	Canon EOS 850D*	$1,379	24.1		•			•		•		•			•	7	170	45	220K	•	•	•	•	•	30-1/4000	•	•	•	•		•	•		8.1	515	
E	Canon EOS 90D	$2,099	32.5		•			•		•		•			•	10	58	45	220K	•	•	•	•	•	30-1/16,000	•	•	•	•		•	•	•	7.7	701	Nov/Dec '19
E	Canon EOS 6D Mark II	$2,189	26.2	•				•		•		•			•	6.5	110	45	7560	•	•	•	•	•	30-1/4000		•	•			•	•	•	7.62	685	Jan/Feb '18
E	Canon EOS 5D Mark IV	$3,699	30.4	•				•		•		•	•		•	7	U	61	150K	•		•	•	•	30-1/8000		•	•	•		•	•	•	8.1	890	Jan/Feb '17
E	Canon EOS-1DX Mark III	$11,999	20.1	•				•		•		•	•			16	1000+	191	400k	•		•	•	•	30/1/8000		•	•	•		•	•	•	8.1	1440	May/Jun '20
	Nikon D7500	$1,599	20.9		•			•		•		•			•	8	100	51	180K	•	•	•	•	•	30-1/8000	•	•	•	•		•	•	•	8.1	640	
	Nikon D780	$3,599	24.5	•				•		•		•			•	7	100	51	180k	•		•	•	•	900-1/8000		•	•	•		•	•	•	8.1	755	Jul/Aug '20
	Nikon D850	$4,549	45.7	•				•		•	•	•	•		•	7	200	153	180K	•		•	•	•	30-1/8000		•	•	•		•	•	•	8.1	915	Nov/Dec '17
	Nikon D6	$10,699	20.8	•				•		•		•	•			14	200	105	180K	•		•	•		900-1/8000		•	•	•		•	•	•	8.1	1270	Nov/Dec '20
	Pentax KF	$1,299	24.24		•			•		•		•			•	6	40	11	77	•	•	•	•	•	30-1/6000	•	•	•		•	•	•	•	7.62	625	
	Pentax K-3 Mark III	$2,699	25.73		•			•		•		•			•	12	37	101	370K	•		•	•	•	30-1/8000		•	•	•	•	•	•	•	8.1	735	Issue 423
	Pentax K-1 Mark II Limited	$4,099	36.4	•				•		•		•			•	4.4	70	33	86K	•		•	•	•	30-1/8000		•	•		•	•	•	•	8.1	925	

DIGITAL RANGEFINDER CAMERAS

	Leica M11	$15,090	60.3	•				•		•		•			•	4.5	100	MF/RF	TBC			•		•	60-1/16,000						•	•		7.5	455	Mar/Apr '22
	Leica M11-P	$15,490	60.3	•				•		•		•			•	4.5	100	MF/RF	TBC			•		•	60-1/16,000						•	•		7.5	455	Issue 425
	Leica M11-D	$15,990	60.3	•				•		•		•			•	4.5	100	MF/RF	TBC			•		•	60-1/16,000						•				457	
	Leica M11 Monochrom	$16,290	60.3	•				•		•		•			•	4.5	100	MF/RF	TBC			•		•	60-1/16,000						•	•		7.5	461	

MIRRORLESS CAMERAS

	Canon EOS R100*	$1,049	24.1		•			•		•		•			•	6.5	97	3975	384	•	•	•	•	•	30-1/4000	•		•	•		•	•		7.5	309	
	Canon EOS R50*	$1,399	24.2		•			•		•		•			•	15	28	4503	384	•	•	•	•	•	30-1/8000	•		•	•		•	•		7.5	328	Issue 423
	Canon EOS R50 V*	$1,449	24.2		•			•		•		•			•	15	28	4503	384	•	•	•	•	•	30-1/8000			•	•		•			7.5	323	
	Canon EOS R10*	$1,729	24.2		•			•		•		•			•	23	123	4503	384	•	•	•	•	•	30-1/4000	•	•	•	•		•	•		7.62	429	Issue 419
	Canon EOS RP	$1,819	26	•				•		•		•			•	5	U	4779	384	•	•	•	•	•	30-1/4000		•	•	•		•	•	•	7.62	440	May/June '19
	Canon EOS R7	$2,469	32.5		•			•		•		•			•	30	184	5915	384	•	•	•	•	•	30-1/8000		•	•	•	•	•	•	•	7.62	612	Jul/Aug '22
	Canon EOS R8	$2,599	24.2	•				•		•		•			•	40	1000+	4897	384	•	•	•	•	•	30-1/16,000		•	•	•		•	•	•	7.5	414	Issue 423
	Canon EOS R6 Mark II	$4,199	24.2	•				•		•		•			•	40	190	4897	384	•	•	•	•	•	30-1/16,000		•	•	•	•	•	•	•	7.62	588	Issue 421
	Canon EOS R5	$5,499	45	•				•		•		•	•		•	20	350	5940	384	•		•	•	•	30-1/8000		•	•	•	•	•	•	•	8.1	650	Sept/Oct '20
	Canon EOS R5 Mark II	$6,699	45	•				•		•		•	•		•	30	760	5850	6144	•		•	•		30-1/32,000		•	•	•	•	•	•	•	8.1	588	Issue 428
	Canon EOS R3	$8,199	24.1	•				•		•		•	•		•	30	540	4779	384	•		•	•	•	30-1/64,000		•	•	•	•	•	•	•	8.1	915	Jan/Feb '22
	Canon EOS R1	$10,990	24.2	•				•		•		•	•			40	500	4368	6144	•		•	•	•	30-1/64,000		•	•	•	•	•	•	•	8.1	920	
	Fujifilm X-T30 II	$1,449	26.1		•			•		•		•			•	20	32	425	256	•		•	•	•	900-1/32,000	•	•	•	•	•	•	•		7.62	329	Jan/Feb '22
	Fujifilm X-M5	$1,449	26.1		•			•		•		•			•	20	127	425	256	•		•	•	•	900-1/32,000		•	•	•		•			7.62	307	Issue 430
	Fujifilm X-S20	$2,349	26.1		•			•		•		•			•	20	256	425	256	•		•	•	•	900-1/32,000	•	•	•	•	•	•	•		7.62	410	Issue 424
	Fujifilm X-T50	$2,599	40.2		•			•		•		•			•	20	168	425	256	•		•	•	•	900-1/180,000	•	•	•	•	•	•	•		7.62	389	Issue 428
	Fujifilm X-T5	$2,899	40.2		•			•		•	•	•			•	15	119	425	256	•		•	•	•	900-1/180,000		•	•	•	•	•	•	•	7.62	476	Issue 422
	Fujifilm X-H2	$3,399	40.2		•			•		•	•	•	•		•	13	1000+	425	256	•		•	•	•	900-1/180,000		•	•	•	•	•	•	•	7.62	579	Issue 420
	Fujifilm X-H2S	$3,999	26.1		•			•		•	•	•	•		•	40	1000+	425	256	•		•	•	•	900-1/32,000		•	•	•	•	•	•	•	7.62	579	Jul/Aug '22
	Leica SL3-S	$8,990	24.6	•				•		•		•	•		•	30		779	TBC	•		•	•	•	1800-1/16,000		•	•	•	•	•	•	•	8.1	768	
	Leica SL3	$11,890	60.3	•				•		•		•	•		•	15	70	315	TBC	•		•	•	•	3600-1/16,000		•	•	•	•	•	•	•	8.1	769	Issue 429

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MIRRORLESS CAMERAS BUYER'S CHECK LIST

CameraHouse

			Sensor Size			Sensor Type		File Formats			Memory Cards							Exposure Modes						Features										
Model * single lens kit ** twin lens kit	Price (Body Only Unless Noted With Asterisk*)	Megapixels (Effective)	Full-Frame	APS/DX	Four Thirds	CMOS	Foveon	RAW	TIFF	JPEG	Compact Flash	Memory Stick	SD/SDHC/SDXC * = microSD	Continuous Shooting Speed (fps)	Buffer Length (U=Unlimited) Max. Resolution	Autofocus Points	Metering Zones	Program	Subject Programs	Aperture Priority	Shutter Priority	Manual	Shutter Speeds	Built-In Flash	Anti-Dust	FHD Video	4K Video	Anti-Shake In Body	Wi-Fi	Built-In Viewfinder	Weather Proofing	Monitor Size (cm)	Weight (Body Only)	Review Issue
Nikon Z30*	$1,549	20.9		●		●		●		●			●	11	71	209	TBC	●		●	●	●	30-1/4000	●		●	●		●			7.5	350	
Nikon Z50*	$1,469	20.9		●		●		●		●			●	11	71	209	TBC	●	●	●	●	●	30-1/4000	●		●	●		●	●		8.1	395	
Nikon Zfc*	$1,799	20.9		●		●		●		●			●	11	71	209	TBC	●	●	●	●	●	30-1/4000	●		●	●		●	●		7.5	390	Nov/Dec '21
Nikon Z50II*	$2,279	20.9		●		●		●		●			●	30	200	231	TBC	●	●	●	●	●	900-1/4000	●		●	●		●	●		8.1	495	
Nikon Z5	$2,399	24.3	●			●		●		●			●	4.5	100	273	TBC	●		●	●	●	30-1/8000		●	●	●	●	●	●	●	8.1	590	Jan/Feb '21
Nikon Z5II	$2,699	24.5	●			●		●		●			●	30	120	299	TBC	●		●	●	●	900-1/8000		●	●	●	●	●	●	●	8.1	620	Issue 431
Nikon Z6II	$3,699	24.5	●			●		●	●	●	●		●	14	200	273	TBC	●		●	●	●	900-1/8000		●	●	●	●	●	●	●	8.1	615	May/June '21
Nikon Zf	$3,499	24.5	●			●		●	●	●			●	30	120	273	TBC	●		●	●	●	900-1/8000		●	●	●	●	●	●	●	8.1	630	Issue 425
Nikon Z6III	$4,199	24.5	●			●		●		●	●		●	60	1000+	299	TBC	●		●	●	●	900-1/16,000		●	●	●	●	●	●	●	8.1	660	Issue 429
Nikon Z7II	$5,549	45.7	●			●		●	●	●	●		●	10	200	493	TBC	●		●	●	●	900-1/8000		●	●	●	●	●	●	●	8.1	615	
Nikon Z8	$7,449	45.7	●			●		●	●	●	●		●	20	1000+	493	TBC	●		●	●	●	900-1/32,000		●	●	●	●	●	●	●	8.1	820	Issue 424
Nikon Z9	$9,899	45.7	●			●		●	●	●	●			30	1000+	493	TBC	●		●	●	●	900-1/32,000		●	●	●	●	●	●	●	8.1	1160	Jan/Feb '22
Olympus OM-D E-M10 IV	$999	20.3			●	●		●		●			●	15	49	121	324	●	●	●	●	●	60-1/16,000	●	●	●	●	●	●	●		7.62	335	Nov/Dec '20
Olympus PEN E-PL10*	$1,199	16.1			●	●		●		●			●	8.6	21	121	324	●	●	●	●	●	60-1/16,000	●	●	●	●	●	●			7.62	332	
OM System OM-5	$1,599	20.4			●	●		●		●			●	30	20	121	324	●		●	●	●	60-1/32,000		●	●	●	●	●	●	●	7.62	366	Issue 421
OM System OM-1	$2,699	20.4			●	●		●		●			●	120	92	1053	324	●		●	●	●	60-1/32,000		●	●	●	●	●	●	●	7.62	511	Mar/Apr '22
OM System OM-3	$3,199	20.4			●	●		●		●			●	120		1053	324	●		●	●	●	60/1/32,000		●	●	●	●	●	●	●	7.62	413	Issue 430
OM System OM-1 Mark II	$3,699	20.4			●	●		●		●			●	120	219	1053	324	●		●	●	●	60-1/32,000		●	●	●	●	●	●	●	7.62	511	Issue 427
Panasonic Lumix G100V*	$1,299	20.3			●	●		●		●			●	10	480	49	1728	●	●	●	●	●	60-1/16,000	●	●	●	●	●	●	●		7.62	303	
Panasonic Lumix G85*	$1,449	16			●	●		●		●			●	9	100	49	1728	●	●	●	●	●	60-1/16,000	●	●	●	●	●	●	●	●	7.62	453	Jan/Feb '17
Panasonic Lumix G95	$1,599	20.3			●	●		●		●			●	9	300	49	1728	●	●	●	●	●	60-1/16,000	●	●	●	●	●	●	●	●	7.62	484	Nov/Dec '19
Panasonic Lumix G9	$1,599	20.3			●	●		●		●			●	20	600	225	1728	●		●	●	●	60-1/32,000		●	●	●	●	●	●	●	7.62	579	Jan/Feb '18
Panasonic Lumix G90*	$1,699	20.3			●	●		●		●			●	9	300	49	1728	●	●	●	●	●	60-1/16,000	●	●	●	●	●	●	●	●	7.62	481	
Panasonic Lumix GH5 II	$2,099	20.3			●	●		●		●			●	12	999	225	1728	●		●	●	●	60-1/16,000		●	●	●	●	●	●	●	7.5	647	Sept/Oct '21
Panasonic Lumix S9	$2,699	24.2	●			●		●		●			●	30	36	779	1728	●		●	●	●	60-1/8000		●	●	●	●	●			7.62	403	
Panasonic Lumix S5	$2,799	24.2	●			●		●		●			●	7	999	225	1728	●		●	●	●	60-1/8000		●	●	●	●	●	●	●	7.5	630	Jan/Feb '21
Panasonic Lumix S5II	$3,199	24.2	●			●		●		●			●	30	300+	779	1728	●		●	●	●	60-1/8000		●	●	●	●	●	●	●	7.62	657	Issue 422
Panasonic Lumix G9 II	$3,299	25.2			●	●		●		●			●	75	225	779	1728	●		●	●	●	60-1/32,000		●	●	●	●	●	●	●	7.62	575	Issue 427
Panasonic Lumix S5IIX	$3,499	24.2	●			●		●		●			●	30	300+	779	1728	●		●	●	●	60-1/8000		●	●	●	●	●	●	●	7.62	657	
Panasonic Lumix S1	$3,599	24.2	●			●		●		●	●		●	9	999	225	1728	●		●	●	●	60-1/8000		●	●	●	●	●	●	●	8.1	899	
Panasonic Lumix GH6	$3,699	25.5			●	●		●		●	●		●	75	200	315	1728	●		●	●	●	60-1/32,000		●	●	●	●	●	●	●	7.5	739	Issue 419
Panasonic Lumix GH7	$3,899	25.2			●	●		●		●	●		●	75	260	315	1728	●		●	●	●	60-1/32,000		●	●	●	●	●	●	●	7.5	721	
Panasonic Lumix S1R	$5,299	47.3	●			●		●		●	●		●	9	50	225	1728	●		●	●	●	60-1/8000		●	●	●	●	●	●	●	8.1	898	Sept/Oct '19
Panasonic Lumix S1R II	$5,499	44.3	●			●		●		●	●		●	40	80	779	1728	●		●	●	●	60-1/16,000		●	●	●	●	●	●	●	8.1	712	
Panasonic Lumix S1H	$5,999	24.2	●			●		●		●			●	9	999	225	1728	●		●	●	●	60-1/8000		●	●	●	●	●	●	●	8.1	1052	Mar/Apr '20
Sigma BF	$3,995	24.2	●			●		●		●				8	1000	49	TBC	●		●	●	●	30-/25,600		●	●	●				●	8.1	388	Issue 431
Sigma fp L	$3,899	61.2	●			●		●		●			●	10	14	49	TBC	●		●	●	●	30-1/8000		●	●	●	●	●	●	●	8.1	375	
Sony Alpha ZV-E10	$1,099	24.2		●		●		●		●		●	●	11	99	425	1200	●	●	●	●	●	30-1/4000		●	●	●		●			7.5	343	
Sony Alpha 6400	$1,299	24.2		●		●		●		●		●	●	11	115	425	1200	●	●	●	●	●	30-1/4000	●	●	●	●	●	●	●	●	7.5	403	Sept/Oct '19
Sony Alpha ZV-E10 II	$1,699	26		●		●		●		●			●	11	1000+	759	1200	●	●	●	●	●	30-1/8000		●	●	●	●	●			7.5	292	
Sony Alpha 6700	$2,299	26		●		●		●		●			●	11	143	759	1200	●		●	●	●	30-1/8000		●	●	●	●	●	●	●	7.5	409	
Sony Alpha 7 III	$2,379	24.2	●			●		●		●		●	●	10	163	693	1200	●	●	●	●	●	30-1/8000		●	●	●	●	●	●	●	7.5	650	Sept/Oct '18
Sony Alpha 7C	$3,299	24.2	●			●		●		●			●	10	223	693	1200	●		●	●	●	30-1/4000		●	●	●	●	●	●	●	7.5	509	
Sony Alpha ZV-E1	$3,249	12.1	●			●		●		●			●	10	1000+	759	1200	●	●	●	●	●	30-1/8000		●	●	●	●	●		●	7.5	400	
Sony Alpha 7C II	$3,299	33	●			●		●		●			●	10	88	759	1200	●		●	●	●	30-1/8000		●	●	●	●	●	●	●	7.5	429	
Sony Alpha 7 IV	$3,499	33	●			●		●		●	●		●	10	1000+	759	1200	●		●	●	●	30-1/8000		●	●	●	●	●	●	●	7.5	658	
Sony Alpha 7CR	$4,799	61	●			●		●		●			●	8	48	693	1200	●		●	●	●	30-1/8000		●	●	●	●	●	●	●	7.5	430	
Sony Alpha 7R III	$4,499	42.4	●			●		●		●		●	●	10	76	425	1200	●		●	●	●	30-1/8000		●	●	●	●	●	●	●	7.5	657	May/June '18
Sony Alpha 7S III	$4,699	12.1	●			●		●		●	●		●	10	1000+	759	1200	●		●	●	●	30-1/8000		●	●	●	●	●	●	●	7.5	699	Mar/Apr '21
Sony Alpha 7R IV(A)	$4,999	61	●			●		●		●		●	●	10	68	567	1200	●		●	●	●	30-1/8000		●	●	●	●	●	●	●	7.5	665	Jan/Feb '20
Sony Alpha 7R V	$5,499	61	●			●		●		●	●		●	10	1000+	693	1200	●		●	●	●	30-1/8000		●	●	●	●	●	●	●	8	638	
Sony Alpha 9 II	$5,689	24.2	●			●		●		●		●	●	20	361	693	1200	●		●	●	●	30-1/32,000		●	●	●	●	●	●	●	7.5	678	May/June '20
Sony Alpha 1	$8,499	50.1	●			●		●		●	●		●	30	165	759	1200	●		●	●	●	30-1/8000		●	●	●	●	●	●	●	7.5	725	
Sony Alpha 9 III	$9,999	24.6	●			●		●		●	●		●	120	192	759	1200	●		●	●	●	30-1/80,000		●	●	●	●	●	●	●	8	617	
Sony Alpha 1 II	$10,999	50.1	●			●		●		●	●		●	30	400	759	1200	●		●	●	●	30-1/32,000		●	●	●	●	●	●	●	8	658	

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